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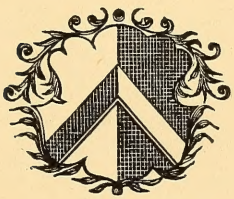
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FREDERIC JOHN FARRE, M.D.

BY

W. S. CHURCH, M.D.

BY the death of Dr. Frederic John Farre, one of the few remaining links which join the present staff of St. Bartholomew's Hospital with a bygone generation of physicians and surgeons has been severed. The gravity of his presence and his somewhat formal though courteous manners insensibly recalled to his younger colleagues the traditional aspect of the eighteenth-century physicians, whilst in his learning and general tone of thought he resembled the older race of physicians rather than those of the present day.

Frederic John Farre was born in Charterhouse Square on December 16, 1804. The house in which his father resided at that time no longer exists, the alterations consequent on the formation of the new Charterhouse Street having necessitated great changes on the south side of the square. His father was Dr. John Richard Farre, who then was in large practice as a consulting physician; his name is, however, more familiar as a pathologist, and as the author of several pathological essays, of which the best known are an Essay on Malformations of the Heart or its Arteries, published in 1814, and on the Morbid Anatomy of the Liver, dated the following year. Dr. J. R. Farre was decidedly in advance of the age as a pathologist, and not only collected a considerable-sized museum of specimens, but endeavoured in a variety of ways to promote the study of pathology and establish it as a distinct branch

of science. Some of his specimens are still included in our Hospital Museum, having been presented in 1853 through the instrumentality of the subject of this memoir, as may be seen from the following extract from the letter which accompanied the offer of his collection to the Governors :—

"To my son Frederic Farre, one of the physicians attached to your Hospital, I consigned my museum, which illustrates many of the most important diseases of the human body; but he having stated to me that by permitting him to add it to the valuable Museum of the Hospital I should much increase its utility to the profession, I willingly join him in requesting your acceptance of it for so beneficial a purpose."

Frederic was his second son, and when nine years old commenced his studies at the school hard by, then under the headmastership of Dr. Russell.[1] It may be said that during his whole life he was more or less associated with the Charterhouse, being born in its immediate vicinity, spending many years at the school, and towards the close of his life being for a considerable period physician to the charity. The school when Farre entered it was exceedingly prosperous, its numbers large, and its reputation high. Among his schoolfellows were Thackeray and Leech. Farre early gave evidence of what were perhaps his leading characteristics through life—steady application to work and a rigid and high sense of duty; these, aided by his natural abilities, caused his career at school to be unusually distinguished. He rose rapidly, and in 1821 obtained the gold medal, and became captain of the school at an earlier age than is common; this position of honour he held for the unusually long period of a year and a half, and then proceeded to Cambridge, entering at St. John's College in 1823. During his first term he obtained a foundation scholarship, and after securing a first-class each year in his college examinations, passed out as a wrangler in 1827. Highly creditable as his university career was, it somewhat disappointed his friends, and it was considered that he had hardly done himself justice by not going in for the classical tripos.

It had been Farre's intention when first going to the university

[1] Afterwards Rector of St. Botolph's, Bishopsgate Street, and Canon of Canterbury.

to prepare himself for holy orders and enter the Church. During his life at Cambridge he changed his views, and decided on medicine as a profession. What caused this change on his part is not known, but Farre then, as a young man, had the same deep feelings and strong convictions on religion which distinguished him throughout life.

In the same year as that in which he took his degree (1827), he entered with his younger brother Arthur as a student, and from that time till his death was in some capacity or other connected with our Hospital and School. Two years later he became a dresser under Mr. Henry Earle, then recently appointed surgeon, and the following year acted as clinical clerk to Dr. Peter M. Latham. It was not until Farre became a medical student that he manifested any predilection for the study of botany; and Dr. Arthur Farre informs me that he himself gave his brother his first introduction to what afterwards became his favourite pursuit. As students the two brothers worked together, not only at human anatomy in the dissecting-room, but also at home; they were enthusiastic comparative anatomists, dissecting all the rare animals they could obtain. Report said that they were not content with tracing the anatomical differences, but that, following out the physiological doctrines of Bichat even farther than their author, they used to put to the test the culinary properties of their subjects.

Having once begun the study of botany, Farre found in it a science thoroughly congenial to his mind, and his love for it never ceased. In his garden at Montague Street, and again at the close of his life at Elsham Road, he would point with pride to the number of plants he was able to rear and cultivate in the uncongenial atmosphere of London; whilst he contracted the only serious illness of his life, an attack of bronchitis, by his devotion to his garden when residing for a time at Lee near Blackheath.

Farre must quickly have become proficient in botanical knowledge, and have attracted the attention of his teachers, for in 1831, while still a student, he was made the first botanical lecturer in our school. This office he held for twenty-three years, discharging its duties with much zeal and success; and there must be many who still remember the herborising expeditions

which from time to time during the summer session he used to conduct.

It is not a little remarkable, as showing the interest he took in botanical science, to find that though he never became a Fellow or member of any of the medical societies of London, he early in life joined the Medico-Botanical Society, the Linnæan, the Botanical Society of Edinburgh, and was one of the original members of the Council of the Royal Botanical Society of London.

In 1833 Farre entered the profession through a portal which has long ceased to exist, taking the degree of Licentiate of Medicine at Cambridge. Why he took this degree rather than that of Bachelor of Medicine does not appear, but I suppose that as a Master of Arts, he could not present himself for the examination for a Bachelor's degree. At all events, by this now obsolete portal he entered the profession, and it was his sole qualification when, on July 23, 1836, he was appointed Assistant-Physician to the Hospital. The following year he took the degree of Doctor of Medicine at Cambridge, and in 1838 became a Fellow of the College of Physicians. Farre's appointment in the Hospital was not due to any vacancy occurring. The out-patient department, which had been established in 1834 under Dr. (now Sir George) Burrows, had increased so rapidly that one Physician was unable to keep abreast of the work, and the Treasurer and Governors very wisely determined to add to the staff. Farre and the late Dr. Jeaffreson were appointed at the same time, so that each Assistant-Physician saw out-patients on two days in the week; the number of Assistant-Physicians was thus made equal to that of the Physicians.

In 1839 the Royal Botanical Society of London was incorporated, and Farre took great interest in, and materially assisted its foundation. I am informed by Mr. Sowerby (the Secretary) that his father, Dr. Farre, and his friend Dr. Sigmond laid out that portion of the grounds which is devoted to the illustration of the 'Natural Orders,' and that great pains were taken by them to arrange the orders in such groups as would facilitate the labours of students engaged in the scientific study of botany, and that the plan differs somewhat from that usually adopted in similar gardens, the plants being arranged in curved groups and masses, and not simply in lines or rows.

At this time his scientific tastes led him to join the Microscopical Society, which was formed in the same year.

Thus at a comparatively early age he held a good position both in the professional and scientific life of London, and greater success might have been expected for him than he attained in later life; but just as his University career hardly came up to the expectation of his friends, so the latter part of his professional life hardly equalled the promise of the earlier years. Much good and laborious work he did, but it was not of a kind to bring him prominently before the world. (I shall hereafter allude to his long and honourable connection with the College of Physicians.)

In the year 1843 Farre became Physician to the Royal London Ophthalmic Hospital, an appointment which gave him much pleasure, as the foundation of that institution had been mainly due to his father and his father's friend Mr. J. Cunningham Saunders. As Physician and Consulting Physician he retained his connection with this institution until his death.

Five years later he married Miss Julia F. Lewis, who with two daughters survive him. At this time he moved from New Bridge Street, Blackfriars, into a house in Montague Street, Russell Square, where he remained for many years.

About this time he became medical examiner to the Rock Life Office, a post he held till his death. Insurance work had an attraction for him, and at various times he held similar appointments in connection with several other assurance offices.

In 1849 Farre delivered the customary introductory address to the students at the commencement of the winter session, and chose "Self-Culture, and the Principles to be Observed in the Study of Medicine," as his subject. By a somewhat curious coincidence his brother, Dr. Arthur Farre, delivered on the same day the introductory address at King's College.

After eighteen years' service as Assistant, Farre became, in 1854, Physician to the Hospital, the Governors having decided to increase the senior staff from three to four both on the medical and surgical sides. The same year, on the death of Dr. Roupell, he became Lecturer on Materia Medica and resigned the Botanical lectureship; in the latter he was succeeded by Dr. Kirkes. His

resignation was marked by an act of characteristic generosity, as he presented to the Governors of the Hospital, on trust for the medical school, the whole of his museum of botany, consisting of between ten and twelve thousand specimens, and comprising (1) an herbarium, mounted; (2) a collection of dried fruits and seeds; (3) fruits, &c., contained in bottles, and specimens of wood; (4) diagrams.

For many years he had been qualifying himself for this important post, studying the properties and actions of the drugs derived from the vegetable kingdom as well as the classificatory and descriptive side of botany. As early as the year 1843 he had obtained leave of the College of Physicians to deliver a lecture within the College on the Materia Medica, and the same permission was granted him on the two following years. He had also taken an active part in the preparation of the last London Pharmacopœia, and had acted as chairman of the College Committee intrusted with its preparation. He held this lectureship for twenty-two years, and many generations of students can bear witness to the earnestness and thoroughness with which he taught this subject. When in 1870, after thirty-four years' work in the out-patient rooms and wards, the limit of age imposed by our Governors was reached, and he had to retire from the office of Physician, Farre was requested by his colleagues to continue his lectureship; this request he assented to, on the condition that Dr. Lauder Brunton was associated with him. With that candour and straightforwardness which was the distinguishing character of his life, he recognised that the development of the subject and the methods of investigation and instruction necessary for the proper teaching of this branch of study were not familiar to him, and that he needed assistance. Experimental physiology and the investigation of the effect of drugs upon the lower animals had never formed any portion of his studies, and this he honestly acknowledged. It must not, however, be supposed that Farre did not keep himself abreast of the times, for we find that in 1864, after the publication of the first British Pharmacopœia, he was requested by the London Committee of the General Medical Council to watch the progress of pharmaceutical knowledge, with a view to a supplement or new edition of the

Pharmacopœia; and for five years, from 1863 to 1868, he was Examiner in Materia Medica in the London University.

In addition to his Hospital lectures, Farre undertook, in conjunction with Messrs. Bentley and Warrington, to bring out an abridgment of Pereira's work on Materia Medica adapted to the nomenclature and formulæ of the British Pharmacopœia; this was completed and published in 1865, and, excepting a short paper in the second volume of our Hospital Reports, was, I believe, his only contribution to medical literature.

Any account of Farre's life would be very incomplete which did not allude to his long and honourable connection with the College of Physicians. Becoming early in life a Fellow of the College, his first term of office as Censor was forty-five years ago; he then held the post for two years, and was again Censor in 1854. He served the College also as Councillor and Examiner on several occasions, and in 1868 he was elected Treasurer; he held this important post for fifteen years, and most ably performed its duties. I am informed that the neatness and precision with which the accounts were kept and the papers filed could not have been surpassed by the most methodical of business men; in fact, extreme accuracy with regard to minute details, especially when connected with money, was one of his hobbies, as more than one Treasurer of our school could testify. In 1884, the year after he resigned the Treasurership, he was elected one of the first Vice-Presidents, upon the creation of that office in the College. Farre's love for the College led him to devote much labour and time to the study of its history and growth. His researches in this direction he embodied in three manuscript volumes which he presented to the College, together with an album containing copies of old maps of London, showing the sites of the two earlier Colleges, several interesting ground-plans of the first and second College buildings, and copies of old engravings giving views of their elevations. This work was with him a labour of love, and he spared no pains to render it as complete as possible.

Farre enjoyed throughout his long life good health, and retained his vigour till his final illness, which commenced in September of the present year. He then had an attack of pleurisy, from which he seemed to be recovering, when unfortunately his wife became

so seriously ill that her life was despaired of. During her illness he remained much in her room, and walked about as if he was and had been perfectly well; but as she recovered, his strength declined, and he became gradually weaker and weaker, and died on the 10th of November.

I have in the preceding pages endeavoured to give an outline of Farre's public life; of his home and inner life I am not qualified to speak. Few of those who had but a slight acquaintance with him were aware of the kindness of heart that lay beneath his formal and somewhat rugged manner. Though naturally reserved and unsympathetic, no trace of selfishness was in him; and Dr. Lauder Brunton, writing of his final illness, says, "One thing which much struck me while attending him was his kindliness and unselfish endeavours to be cheery and appear well in spite of his weakness and illness." From boyhood to old age he was ever guided by the highest motives, and though he cannot be said to have attained marked professional success, he has left behind him the example of a well-spent and thoroughly honourable life.

[The Records of Harvey, here reprinted, were published by Sir James Paget in 1846, when he was Warden of the College; and from time to time, after his example, the history of our Hospital has been written by Dr. Church, Mr. Baker, and Dr. Norman Moore: to the great advantage of that love of their Hospital which is so strong in St. Bartholomew's men. But it is now forty years since the Records of Harvey were published, and only a few copies remain. From one of them, this reprint has been made: with no alteration either of text or of type, save that the notes have been arranged in a more convenient way, and some mistakes in the printing have been corrected.]

RECORDS

OF

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IN EXTRACTS FROM THE

JOURNALS OF THE ROYAL HOSPITAL

OF

St. Bartholomew.

PUBLISHED BY PERMISSION OF THE PRESIDENT AND TREASURER.

WITH

NOTES,

BY

JAMES PAGET,

WARDEN OF THE COLLEGIATE ESTABLISHMENT,

AND LECTURER ON PHYSIOLOGY, IN THE HOSPITAL.

LONDON:

JOHN CHURCHILL, PRINCES STREET, SOHO.

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PREFACE.

THE following Extracts are literal copies of all that is recorded concerning Harvey in the journals of Saint Bartholomew's Hospital. It is one of the brightest features in the history of that noble institution that he, the great discoverer of the circulation, "Physiologiæ lumen; Angliæ immortale decus," was for four and thirty years its physician, more honoured by its Governors, and exercising a greater influence in its affairs, than any medical officer before the time of Abernethy. Hence, trivial as some of the records may seem, I am sure they will be read with interest by those who are zealous for the honour of Saint Bartholomew's; to them it cannot but be pleasure to dwell on all that relates to the great Harvey in his connection with their Hospital.

But, though most of the records may be thought to have only a local interest, there are some which are remarkable as illustrations, both of the life and character of Harvey, and of the medical history of hospitals in the 17th century. This is peculiarly the case with that containing the rules for the

Duke of Lenox; and on his return, in 1631, he became Physician to the King and Royal Household.

It is probable that after this appointment, the greater part of Harvey's time was spent with the court. The King encouraged his researches, and himself, with the nobles of his household, used to engage Harvey in the demonstration of his great discovery. It was also by the King's command that in 1635, he dissected and recorded the examination of the body of Thomas Parr, who died at the age of 153 years.

When the civil war broke out, Harvey accompanied the King from London: he was present at the battle of Edgehill in 1642, and thence went to Oxford, where he was shortly after incorporated a Doctor of Physic, and in 1645, was made Warden of Merton College.

Within a few months, however, Oxford being surrendered to the Parliamentary troops, the former Warden was restored; and Harvey returned to London. He lived for some time with his brother Sir Eliab, who resided in the Poultry; and then passed many years in retirement at Lambeth and Richmond.

In 1651, with the same diffidence which had led him to delay the printing of his work upon the circulation of the blood for twelve years after he had completed the demonstration of the doctrine, he allowed his friend and biographer, Sir George Ent, to publish his "Exercitationes de

Generatione Animalium." In 1652 he undertook to build and store at his own expense, in the garden of the College of Physicians, a Museum and Library; which, being completed in the following year, he presented to the College after a splendid banquet, to which he had invited all the fellows.

In 1654 Harvey was elected President of the College, but declined the honour on account of his age and infirmities; he still, however, attended the College meetings, and in 1656 gave to the College an estate of £56 a year, which had been left him by his father. In 1657, on the third of June, having entered his 80th year, he died; and the fellows of the College, who had already, in 1652, placed his statue in their Hall, accompanied his body far beyond the city walls on the way to its grave at Hempstead, in Essex.

College,
Saint Bartholomew's Hospital,
September 9th, 1846.

SAINT BARTHOLOMEW'S HOSPITAL REPORTS.

OUR HOSPITAL PHARMACOPŒIA AND APOTHECARY'S SHOP.

(Continued from Vol. XX.)

BY

W. S. CHURCH, M.D.

In my former communication I sketched the rise of the Apothecary's shop within the walls of the Hospital, and gave a brief account of the earliest of our Hospital Pharmacopœias; one discovered by Dr. Moore among the MSS. of Dr. Edward Browne, dated 1670, and the other transcribed by Theophilus Philanthropos in 1739, and published in his "Physician's Vade Mecum." That period appeared to me a good one at which to break off, as the next Pharmacopœia of which I have been able to find a copy is dated 1764,[1] eighteen years after the publication of the fifth edition of the Pharmacopœia of the London College of Physicians. There is, however, no doubt that our Pharmacopœia underwent revision long before that date, and I found in the Library of the Royal College of Surgeons a manuscript copy of our Pharmacopœia dated 1755, which is identical, or nearly so, with that given in the "Modern Practice." Our physician, Dr. Richard Tyson, took much interest in the

[1] Modern Practice of the London Hospitals. Printed for T. Carte and W. Nicholl in St. Paul's Churchyard.

Ma^tles l'res that the said Mr. Harvey shall have the said office nexte after the decease or other dep'ture of Mr. Doctor Wilkenson whoe nowe holdeth the same w^th the y'ly ffee & dewtyes therunto belonginge, Soe that then he be not founde to be otherwyse imployed, that may lett & hynder the chardge of the same office, which belongeth thereunto.

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xxviii° die Augusti A° Dni 1609.

Mr. Newman, Mr. Shaw . . . [*and others*].

DR. HARVEY

Mr. Willm. Harvey Doct^or of Physick came before the Gov'nors beforenamed and is contented to execute the office of the physicon of this howse untill mych'as next, w'h out any recompence for his paynes herein; which office Mr. Docto^r Wilkenson late deceased held. And Mr. Dr. Harvey beinge asked whether he is not otherwyse imployed in any other place which may lett or hynder the execucon of the office of the physicon towarde the poore of this hospitall; hath answered that he is not, whear-

ments in reversion were granted to three candidates for the office of surgeon. Messrs. Boone, Pinder, and Eaton were elected to succeed to the first three vacancies that might happen in the surgical staff; and this without any of the precautions against pre-occupation that were observed in the appointment of Harvey.

The system, though on many accounts objectionable, was not, in the case of medical affairs, without some advantage; since one who was appointed to succeed to an office was usually required to discharge its duties during the absence of the possessor. (See an extract from the Journal of the 19th of January 1633, p. 11.)

fore yt is thought fytt by the sayd Gov'nors that he supply the same office untill the nexte Court, And then Mr. Dr. Harvey to be a sutor for his admyttance to the said place accordinge to a graunt thereof to him heartofore made.

Cur. tent. Sabti xiiii die Octob^{r} 1609.

In presence of S^{r} John Spencer Knight, President . . . . [*and others*].

DR. HARVEY

This day Mr. Willyam Harvey Docto^{r} of Phisick is admytted to the offyce of the Physicon of this Hosp^{ll}, which Mr. Dr. Wilkenson deceased late helde according to a form^{r} graunt to him made and the chardge [1] of the sayd office hath bene redd unto him.

1 . "14° Octobr, 1609.

"*The Chardge of the Phisicon of St. Bartholomewes Hospitall.*"

"PHISICON :

"You are here elected and admitted to be the Phisicon for the Poore of this hospitall, to p'forme the chardge followinge, That is to say, one day in the weeke at the leaste thorough the yeare, or oftner as neede shall requyer you shall come to this Hospitall, and cause the Hospitler, Matron, or Porter, to call before you in the hall of this hospitall such and soe many of the poore harboured in this hospitall, as shall neede the counsell & advise of the phisicon. And you are here requyred & desyred by us, in God his most holly name, that you endevour yourselfe to doe the beste of your knoweledge in the profession of phisicke to the poore then p'sente, or any other of the poore at any tyme in the weeke w^{ch} shalbe sent home unto you by the Hospitler or Matron for your counsell, wrytinge in a booke appoynted for that purpose, such medicines with theire compoundes and necessaries as apperteyneth to the apothecary of this house, to be provyded and made reddy for to be ministred unto the poore, every one in p'ticular, accord-

xxj° die Octob^r A° 1609.

Mr. Baron Sotherton . . . [*and others.*]

P. CONCESS. JOHIS SPENCER, MILIT.

This day S^r John Spencer Knight sent his lre to the Gov'nors of this howse whearin is showed that Marten Lewellen the steward to this hospitall beinge indebtted to John Harvey one of his Ma^ties Footemen in the sum of LII^ld x^s, the said John Harvey exhibited his peticon to the right ho^n. the L^d highe Threr of England and Sir Julyus Cesar Knight Chauncelor of his Ma^ties Court of Exchequer whose cause was referred by theire honors to the L^d Mayor & Alld'ren of this citty, And for that the said Lewellen is one of the officers of this hospitall my

inge to his disease. You shall not for favour, lucre or gaine, appoynte or write any thing for the poore, but such good and wholsome things as you shall thinke w^th your best advise will doe the poore good, without any affeccon or respecte to be had to the apothecary. And you shall take noe gifte or reward of any of the poore of this house for your counsell. This you will promise to doe as you shall answeare before God, and as it becometh a faithfull phisicon, whom you cheifly ought to serve in this vocation, is by God called unto, and for your negligence herein, if you faile you shall render accompte, And soe we requyer you faithfully to promise in God his most holly name, to p'forme this your chardge in the hearinge of us, with your beste endevour as God shall enable you soe long as you shalbe phisicon to the poore of this hospitall: *Provided alwaies y^t if any patient now admitted or hereafter to bee admitted shalbee soe infirme of body, y^t hee, shee, or they canot p'sonally come into the hall without p'judice to their healthes That then att all tymes in such cases haveing notice you shall goe into such ward or wards in this howse to p'scribe for their deseases.*"[1]

[1] In the original, this sentence in italics is not in the same handwriting as the rest of the charge; it appears to have been added many years after the appointment of Harvey, and there is no allusion to such a rule in the articles which he drew up.—See Appendix, p. 25.

L[d] Mayor & Court of Alld'ren have ordered that the Gov'nors of this howse doe cause him to ende the same; And they callinge the said ptyes before them, it appeared that the said Marten Lewellen is bound by his obligacon to Willyam Harvey Doctor of Phisicke brother of the said John Harvey,[1] for the payment of the said debt of LII[ld] x[s] at a day longe sythence paste; And whearas the said Marten Lewellen is to receave the y'ly stypend of x[ld] p. ann. so longe as he shalbe steward of this howse It is ordered & agread for paym[t] & satysfaccon of the

[1] In the Life of Harvey, which is prefixed to the edition of his works published by the Royal College of Physicians, it is stated that William Harvey was the eldest of nine children, of whom seven were sons and two daughters. The same also is proved by the following admirable epitaph, placed in Folkstone Church, to the memory of his mother:—

"A. D. 1605 Nov. 8th, dyed in y[e] 50th yeere of her age
JOAN, Wife of THO: HARVEY. Mother of 7 Sones & 2 Daughters.
A Godly harmles Woman: A chaste loveing Wife:
A charitable quiet Neighbour: A co~fortable frendly Matron:
A p~ovident diligent Huswyfe: A careful te~der harted Mother.
Deere to her Husband: Reverensed of her Children:
Beloved of her Neighbours: Elected of God.
Whose Soule Rest in Heaven: her Body in this Grave,
To Her a Happy Advantag[e]: to Hers an Unhappy Loss."

The authors of the Life above-mentioned add, that five of the sons were great and rich merchants; but that of the lives and fortunes of the other children they knew nothing certain. Probably, this John Harvey was the son of whom no account has been hitherto given; for, if he had been a merchant, I think, from the style of all the hospital records of the time he would have been so called, or else that the name of some company or guild to which he belonged would have been mentioned.

The place of one of the King's footmen, which he held, does not

said debt of LII^{li} x^{s} that the said y'ly stypend of x^{li} p. ann. dewe to the said Lewellen soe longe as he shalbe steward to the hospitall be payed to the said Willyam Harvey or his assignes by L^{s} quarterly in the yere untill suche tyme as the said debte of LII^{li} x^{s} be fully paied And that the said Willyam Harvey may notwthstandinge p'ceade in lawe as well againste the said Marten Lewellen as his sewertyes John May clothworker, and Thomas Wood, vinten' unles the said p'tyes will confesse the accoñ & suffer a judgment theruppon and dischardge the ordinary ffees of the court wthin one monthe next followinge which if they doe then a defeasaunce to be made betwene him and the said p'tyes, that noe execucon be layed uppon them or eyther of

certainly imply that he was in a much lower rank than his brothers. It may have been such a place at Court as is now called by synonym of more seeming dignity; or, if not, yet he may have received a good salary for the office while he discharged its duties by deputy. He died in 1645, and left a hundred pounds to William Harvey's wife.

The name of Harvey occurs more often than any other in the list of Benefactors to the Hospital in the 16th and 17th centuries. Sir James Harvey, Knight and Alderman, gave twenty pounds in 1583; William Harvey himself left thirty pounds to the Hospital at his death in 1657; Sir Eliab Harvey, his brother, left twenty-five pounds in 1664; Lady Mary Harvey, the widow of Sir Eliab, left fifty pounds in 1674[1]; and Benjamin Harvey the same sum in 1684. Mr. Daniel Harvey, a member of the Grocers' Company, was admitted a Governor of the Hospital in 1640.

[1] The terms of the will by which this sum was left were very indefinite; but the Governors of the Hospital, considering the former gifts from members of the same family, and the long connection of Dr. Harvey with the Hospital, thought it would be safe to enter into a bond to indemnify the executors for any loss they might sustain by paying the money. Accordingly, at a general court, two Governors were chosen, by drawing lots, to be guarantees to the executors; and the money was paid.—See the Minutes of several Courts in 1674-5.

them unles default of payment be made as aforesaide.

Cur. tent. Jovis xxviii° die Julii A° Dni 1614.

In presence of Sir Thomas Lowe Knight Presedent . . . . [*and others*].

DR. HARVEY.

It is thought meate by this court That Mr. Dr. Harvey or his successor Phisicon for this hospitall, shall have the howses nowe or late in the tenures of M^ris^ Gardner & Dr. Bonham, with a p'cell of the garden nowe in the tenure of Willm Allen in Weste Smythfield after the expiracon of the lease sometyme graunted to Rob'te Chidley gent. which the said Willm Allen now holdeth And the same then to be devyded and layed forth at the discrecon of the Gov'nors of this howse, for so longe tyme as he shalbe Doctor to this howse, for such y'ly rent and uppon such condicons as this court shall thinck fytt.

Cur. tent. ultimo die Marcii Anno Dni 1626.

In presence of S^r^ Thomas Bennett Knight Presedent . . . . [*and others*].

DOCT^r^ HARVY.

This day Mr. Doctor Harvy physicon to this hospitall made suite to have the howse in West Smithfeild late in the tenure of Widowe Allen deceased accordinge to a former graunt. It is ordered that if he

will sufficiently repaire the in all manner of repacons to the contentment of the Gov'nors, and give the yerly rent of XIII^{ld} VI^{s} VIII^{d}, Or otherwise pay the yerely rent of XX^{ld}, & the said howse to be repaired at the charge of this hospitall, Then he to holde the same soe longe as he shalbe Doctor to this hospitall and shall inhabitt the same, & shall give his psonall attendance for the visitacon of the poore of this hospitall, And Mr. Tre'r Mr. Palmer Mr. Hill Mr. Strangways & such other of the Gov'nors as shall meete on Monday next to conferr w'h him accordingly.

Cur. tent. Ven'is nono die Junii Anno Dni 1626.

In presence of S^{r} Thomas Bennett Knight Presedent . . . . [*and others*].

Mr. Doctor Harvy.

It is further ordered that forasmuch as Mr. Doctor Harvy phisicon of this hospitall hath bine warned to this court to give his aunswer whether he will accepte of the offer made to him at the last court of a Messuage or Tenement in Smithfeild late in the tenure of Sara Allen widowe deceased, accordinge to an order then sett downe, whoe hath refused to take the same accordingly It is therefore thought good for the benefitt of the poore of this hospitall that if he shall not accepte thereof before the 19th day of this instant moneth, Then it is graunted that John Meredith Skynner shall have a lease of

the same ten'te for 31 yeares if he and Elizabeth his nowe wife shall soe longe live, for the ffyne of c^{ld} to be paid at the sealing and the yerly rente of ffower pounds and he to bestowe in & uppon the same ten'te in needful reparcons within one yere nexte followinge the some of c^{l} and to be bound to all repar'cons.

Cur. tent. Veneris septimo die July Anno Dni 1626.

In presence of S^{r} Thomas Bennett Knight President . . . . [*and others.*]

DOCTOR HARVY

It is graunted that Mr. Doctor Harvy Phisicon shall have his stipend beinge xxv^{ld} p. ann' augmented to the some of 33^{ld} 06^{s} 08^{d} in consideracon that he doe relinquishe all his claime of any form^{r} graunt of a howse in Smithfeild late in the tenure of Widowe Allen w^{ch} was ordered for him whoe hath refused to take the same uppon such condicons as this court hath thought fitt.

Curia tent. Sabti xxj^{o} die Januarii $16\frac{28}{29}$.

In presence of Sir Rob^{t} Ducy Knight & Barron^{t} Presedent . . . [*and others.*]

DR. HARVEY

This day Doctor Harvey Phisicon to this hospitall declared to this court that he is comaunded by the Kings most excellent ma^{ty} to attend the illus-

trious Prince the nowe Duke of Lenox[1] in his travells beyond the seas, and therefore desireth that this court would allowe of —— Smith Doctor in Phisick for his deputy in p'formance of the office of phisicon for the poore of this hospitall duringe his absence. It is thought fitt that the Gov'nors of this hospitall have further knowledge & satisfaccon of the sufficiency of the said Mr. Smith Then they to make theire choice either of him or some other whome they shall thinck meete for the execucon of the same place duringe the absence of the said Dr. Harvey.

[1] The Duke of Lenox here mentioned was James Stuart, fourth Duke of Lenox in Scotland.[1] He was advanced by letters patent, dated August 8th, 1641, to the dukedom of Richmond. He was lord great chamberlain, and held many other honourable appointments, in the reign of Charles I.; and is frequently mentioned by Clarendon as a young nobleman of the highest principles and most staunch loyalty. He subscribed £40,000 to the royal cause; adhered to it faithfully through all his life; and attended the king to his grave at Windsor.

Harvey was well associated with such a man. He was himself a firm royalist; and suffered (what science has suffered much more) the loss of many anatomical papers, which, with other things, were stolen from his lodgings at Whitehall in the beginning of the rebellion. At the time of his appointment to travel with the Duke of Lenox, he was Physician Extraordinary to the King, an office which he had held from the beginning of the reign of Charles I., and for several years during the reign of James I. He became Physician in Ordinary in 1630 or 1631.

[1] Burke's Extinct Peerage, 2nd edit. p. 502, 1840.

Curia tent. lune xxv^to^ die April Anno Dni 1631 in domo Manconali p' nobilis Robti Ducie Barronet Maioris Civitat London.

In presence of S^r^ Rob^t^ Ducy Lord Mayor Presedent . . . [*and others*].

DR. ANDREWES

It is graunted that Richard Andrewes Do^r^ in Phisick shall have the rev'con next avoidance & place of phisicon to this hospitall after the death resignacon or other dep'ture of Do^r^ Harvy nowe phisicon to this hospitall late sworne Phisicon in Ordinary for his Ma^ts^ Howsehold, w^th^ the yerly stipend thereunto nowe belonginge.

Curia tent. Sabti xix^o^ die January Anno Dni 163⅔.

In presence of S^r^ Robert Ducie Kn^t^ & Baron^t^ Presed^t^ . . . . [*and others*].

DR. HARVY.

It hath bine thought convenient uppon complaint of some of the chirurgions of this hospitall that whereas Doctor Harvy phisicon for the poore of the said hospitall by reson of his attendance on the King's Ma^tie^ cannot soe constantly be present w^th^ the poore as heretofore he hath bine, but sometymes doth appoint his deputy for the same, That therefore Doctor Andrewes physicon in rev'con of the same place to this hospitall in the absence of Do^r^ Harvey doe supply the same place wherby the said poore may be more respected and Do^r^ Andrewes the better acquainted to p'forme the same office when it shall

fall, & in the mene tyme to be recompenced by this court yerly as shal bethought fitt. This order not to p'iudice Dr. Harvy in his yerly ffee or in any other respect then aforesaid [1].

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xiii° die May Anno Dni 1633.

This day came into this Compting howse Doctor Smith phisicon by the appointm^t of Doctor Harvey, phisicon to this hosp^ll whoe is to attend the King's Ma^tie into Scotland, & tendred his s'vice to Mr. Threr and other the Gov'nors for the poore in the behalfe and absence of Doctor Harvey. Aunswer was made by Mr Threr [*Martin Bond* [2]] that Doctor Andrewes phisicon in rev'con to this howse was by the Court ordered to attend the occasions of this

[1] *Vide* Appendix.

[2] Of those who exercised the chief authority in the Hospital, while Harvey was its physician, many were admirably devoted to its welfare. Sir Robert Ducie, who was President from 1628 to 1634, showed his zeal by his gift of £200. So large a sum had been very seldom given since the granting of the charter. Mr. Martin Bond or, as he is sometimes called, Captain Bond, whose name is here referred to, was elected Treasurer in 1620, having been a Governor since 1607. He held office for twenty-two years, and retired when he was past eighty years old, because of "his greate yeares and weakenes of body." His portrait was placed in the hospital shortly after his retirement; an honour paid very rarely, and to none but the greatest benefactors. One other on whom it was conferred about the same time, was Sir Nicholas Rainton, who was elected a Governor in 1617, and whose eminent merits were singularly proved by the circumstances of his election to the Presidency in 1634. Sir Paul Pinder, also, who left £600 to the Hospital, was a Governor in the time of Harvey.

howse in the absence of Doctor Harvey & to have allowance from this howse accordingly. Nevertheles if Doctor Smith pleased to accompany Doctor Andrewes in the buisines, this howse would be very well content, unto w^{ch} Doctor Smith replied that if Doctor Andrewes were appointed & did p'forme accordingly; There is noe need of twoe.

Sabti quinto die Octobr. Anno Dni 1633.

In presence of S^{r} Rob^{t} Ducie Knight & Baron^{t} Presedent . . . [*and others*].

DR. HARVEY.

Uppon mocon of Do^{r} Harvey Phisicon to this howse, It is thought fit that Twesday senight in the afternoone be the tyme that the Gov'nors shall heare himselfe and the chirurgions uppon some pticulers conc'ninge the good of the poore of this howse & reformacon of some orders conceaved to be in this howse, And the chirurgions & the apothicary to be warned to meete accordingly. And Mr. Aldr'an Mowlson S^{r} Maurice Abbott Mr. Aldr'an Perry & others the Gov'nors here present are intreated to meete at the compting howse to heere & determine the same.

Curia tent. xv° die Octobris Anno Dni 1633.

In presence of S^r Robt^te Ducie Kn^t and Barron^t Presedent . . . [*and others*].

DR. HARVEY.

This day Do^r Harvey Phisicon to this hospitall p'sented to this court c'taine articles for the good & benefitt of the poore of this howse, w^ch the Gov'nors have taken into theire consideracons & doe allowe & order them to be putt in practize And all defaults in the not p'formance of any of the said articles to be corrected & amended by the Gov'nors as they in theire discresions shall thinck fitt & convenient.

Forasmuch as the poore of this howse are increased to a greater number then form'ly have bine, to the greate charge of this hospitall & to the greater labour & more necesary attendance of a phisicon; And beinge much more alsoe then is conceaved one phisicon may conveniently p'forme.

And forasmuch as Do^r Harvey the nowe physicon to this hosp^ll is alsoe chosen to be phisicon to his Ma^tie & therby tydd to daily s'vice & attendance on his Ma^tie

It hath bine thought fitt & soe ordered that there shalbe for this p'nte occasion two phsicons for this hospitall, And that Dr. Andrewes Phisicon in rev'con be nowe admitted to be alsoe an imediat phisicon to this hospitall And to have the sallary or yerely ffee of xxxiii^li vi^s viii^d. for his paines henceforth duringe the plesure of this court.

And this court for the longe s'rvice of the said

Dr. Harvey to this hosp^{ll} & in consideracon that he is phisicon to his Ma^{tie} doe give & allowe him leave & lib'ty to dispose of himselfe & tyme, and to visit the poore noe oftener then he in his discretion shall thinck fitt.

And it is ordered that Mr. Threr shall alsoe pay unto the said Do^{r} Andrewes the some of xx^{l} for his paines taken in visitinge and p'scribinge for the poore of this howse for this yeare last past by the direccon and att the request of the Gov'nors of this howse.

Alsoe at the suite of the apothicary (for the consideracons abovesaid) It is thought fitt & soe graunted that x^{d} be yerly added to his sallary from Mich'as last past for & towards the mainten'ce of a Jurnyman to be daily p'sent in the apothicaryes shopp in this hospitall, to helpe him in the dispatch of his busines, duringe the plesure of this court.

Likewise at the mocon of Do^{r} Harvey It is graunted, that Mr. Threr shall pay unto Do^{r} Smith whoe was the deputy of Do^{r} Harvey and by him appointed in his absence to visite the poore of this hospitall the some of x^{ld} in gratuity from this court, and he is thereuppon intreated in respect the hospitall hath nowe two phisicons that he doe not henceforth troble himselfe any more to visite or p'scribe to the poore of this hospitall.

Decimo quinto die Octobr Anno Dni 1633.

Do[r] Harvey Phisicon to this hospitall presented to this court c'taine orders or articles by him thought fitt to be obs'ved and putt in practize.—viz.—

1. That none be taken into the hospitall but such as be curable or but a c'taine number of such as are incurable.

Allowed.

2. That those that shalbe taken in for a c'taine tyme be discharged at that tyme by the hospitler, unles they obtayne a longer tyme; And to be discharged at th'end of that tyme alsoe.

In use.

3. That all such as are c'tefied by the do[r] uncurable & scandelous or infeccous shalbe putt out of the said howse, or to be sent to an out-howse[1]; And

[1] The Out-Houses here mentioned were Lock Hospitals belonging to St. Bartholomew's, and used for the reception of patients labouring under syphilis and other diseases supposed to be infectious or incurable. One was situated in Kent Street, then called Kentish Street, in Southwark; the other was at Kingsland. They had been two of the numerous Lazar-houses founded for lepers, when, between the 11th and 15th centuries, the leprosy (Elephantiasis Græcorum) was rife in Britain.[1] That in Kent Street was founded some time previous to 1321, with the title of "the hospital of the Blessed Mary and of St. Leonard, for lepers, without Southwark." That in Kingsland was probably less ancient.

At the beginning of the 16th century, when leprosy had become so

[1] See the very interesting "Antiquarian Notices of Leprosy and Leper Hospitals in Scotland and England." By James Y. Simpson, M.D., in the *Edinburgh Medical and Surgical Journal*, vols. lvi. lvii. 1841-2.

in case of suddaine inconvenience this to be done by the do^{r} or apothecary.

Allowed.

4. That none be taken into any outhowse on the

rare in England that hospitals were no longer needed for those who were afflicted by it, the Lazar-houses, falling into disuse, were destroyed or devoted to various other purposes. One of the most ancient gave place to the Royal Palace of St. James', whose chapel stands where once stood "St. James's Hospital," founded, probably, before the Norman conquest of England, "for the reception of fourteen leprous virgins living chaste lives." Others, as that at Ilford in Essex, became alms-houses; others were converted into general hospitals. Of those in the neighbourhood of London, seven remained in 1547 when the charter was granted to St. Bartholomew's; and in 1550, the hospital-accounts contain charges for the conveyance of patients to Lazar-houses at Mile-End, Hammersmith, Finchley, Southwark, Knightsbridge, Highgate, and Kingsland. In the journal of the same year there is a memorandum of the persons delivered on certain days to the proctors (as they are called) of these houses; from which, also, it appears that with each person were sent a mattress, a bolster, a coverlet, and a pair of sheets; so that it is probable the houses were not at this time properly fitted up for the reception of patients. The houses at Finchley and Mile-End seem very soon after this time to have been disused. The other five were in use in 1608; for in this, as in all previous years, there are notices of bills paid to their several guiders, or surgeons, for the charge and cure of patients. Some time before 1621, the number of those connected with the hospital was reduced to the two at Southwark and Kingsland, which had at this time become part of the hospital property, and were entirely under the control of the Governors. The *Lock* (as it was usually called) in Kent Street, Southwark, was appropriated to men; and the *Spital* at Kingsland, to women. Each contained about thirty beds, and was under the charge of the guider, guide, or surgeon who was appointed by the Governors of the Hospital, and who received from them, for many years after 1608, an annual stipend of four pounds a year, and fourpence a day for the diet of each patient under his charge. After the great fire in London, when the heavy loss of property sustained by the Hospital made the strictest economy necessary, the patients admitted into the Locks were required to pay the fourpence a

charge of this hospitall, but such as are sent from hence.

Allowed.

5. That no chirurgion, to save himselfe labour,

day themselves, the rule being relaxed only in favour of those who were penniless and friendless.

As the hospital itself rose in importance, so did its adjuncts, the Locks ; or, at least, their officers did : for in 1754, each surgeon had a salary of £30 a year, besides the house given him for his residence, and a gratuity of £50 a year for medicines. At this time, also, and for many years previously, it was usual for the two senior assistant-surgeons to the hospital to be the "surgeons and guides" of the Locks.

The total cost of the two establishments about 1754 was, on an average, 700 pounds a year. And as the Hospital was at this time barely able to maintain its own expenses in the great increase of its extent at the rebuilding, the dissolution of the Locks was resolved on, and was accomplished in 1760, in which year also the rebuilding of the hospital was completed, and wards were set apart for the reception of syphilitic patients. After this time the Locks were let for ordinary purposes[1]; and, when they had long served for these, they were pulled down. The removal of the unconsecrated chapel of that at Kingsland is just completed ; and I believe that the only relic that exists of either of them, is the Sacramental Chalice now used in the wards of the hospital, which was formerly in use at the Lock, in Southwark.

There was no doubt that the Locks were destined chiefly for syphilitic patients, and it was for a long time a rule of the Hospital that none such should be admitted into the wards ; but this rule was probably never strictly complied with. It is evident, by the extract, dated October 18, 1550, that syphilitic patients were knowingly admitted into the Hospital at that time. William Clowes, also, who was for many years surgeon to the Hospital, speaks thus in his "Briefe and necessary treatise touching the disease usually called Lues Venerea.[2]"

[1] There are engravings of them in this phase of their existence in Wilkinson's "Londina Illustrata," vol. i. pl. 67, 68. London, 1819.

[2] P. 149 of the edition of 1596. Astruc refers to this treatise, of which the first edition was published in 1575, as the earliest English work on syphilis. The edition of 1596 is appended to Clowes' more celebrated work, "A profitable and necessarie booke of observations for all those that are burned with the flame of gun-powder."

take in or p'sent any for the do^{r}; otherwise the charge of the apothecarys shopp wilbe soe greate, & the successe soe little, as it wilbe scandelous to the howse.

Allowed.

"I may speake boldly, bicause I speake truly; and yet I do speak it with greefe of minde, that in the Hospitall of Saint Bartholomew in London, there hath beene cured of this disease by me and three others, within five yeeres to the number of one thousand and more. I speak nothing of Saint Thomas Hospitall and other houses about the citie [alluding, probably, to the Lazar-houses] wherein an infinite multitude are daily cured. The Masters of the foresaid Hospitalls, being mooved with devotion and a Christian-like care towards these wicked and sinfull creatures are daily inforced to take in a number of these diseased people that otherwise would infect many good and honest persons: seeking with like care to restraine this greevous infection, and yet the number still increaseth. It happened very seldom in the Hospitall of Saint Bartholomew whilst I staid there; amongst every twentie so diseased that were taken into the said house, which was most commonly upon the Monday, ten of them were infected with Lues Venerea."

It was probably to put an end to this too free admission of such cases that Harvey's peremptory rule was framed. It was afterwards strengthened by an order, that if any syphilitic patients fraudulently obtained admission in the Hospital, they should be instantly expelled, and not even allowed the benefit of the treatment at the Locks. Notwithstanding, it is certain, that in 1754 it was, and had been long, customary to receive a certain number of such patients into what were called the Fluxing wards.

On the other hand, it appears, that for a long time after the first annexation of the Locks, other patients besides the syphilitic were sent thither. In November 1603, there is an order containing an incidental notice of the "poore patients infected with the plague and other grievous deseases sent from this hospitall" to the Locks; and Harvey's rules require that all the incurable and infectious cases should be sent to the out-houses, as well as the scandalous, by which are probably meant the syphilitic.

6. That none lurke here for releife only or for slight causes.

Allowed.

7. That if any refuse to take theire phisick, they may be discharged by the do^{r} or apothecary or punished by some order.

Allowed.

8. That the chirurgions in all difficult cases, or where inward phisick may be necessary shall consult with the Do^{r},[1] at the tymes he sitteth once in the weeke, & then the M^{r} himselfe relate to the Do^{r} what he conceaveth of the cure & what he hath done therein, And in a decent & orderly manner

[1] The prohibition of the surgeons from the prescribing of inward physic, even in surgical cases, was so fully supported by the law, as put in force at the frequent instance of the College of Physicians in Harvey's time, that it would have been vain for the surgeons to protest against it. How many prosecutions the College of Physicians instituted against such infringements of their privileges, and with what success in fines, imprisonments, and prohibitions, the reader may find in Dr. Goodall's "Historical Account of the College's Proceedings against Empiricks and unlicensed Practisers, &c.," London, 1684, 4to. Twice in Harvey's time the surgeons made attempts to obtain from Parliament and the King the right to give what they deemed good to help their external applications; pleading very truly "the great and heavy burthen to the Common-wealth in general, when for every hurt apperteyning to the Chirurgion's cure the Patient must be forced to entertain a Surgeon, a Physician, and an Apothecary;" but all in vain. The College of Physicians was then nearly as irresistible in the execution, as it was inflexible in the assertion, of its rights.

Yet it must have been with a heavy heart that John Woodall "agreed unto" this strict ordinance of his colleague. For he had written on the question with a decision worthy of his great successor

p'ceed by tho do^{rs} dirreccons for the good of the poore and creditt of the howse.

Agreed unto.

9. That no chirurgion or his man doe trepan the head, peirce the body, dismember or doe any greate oper'con on the body of any but wth th'app'bacon & by the direccon of the Do^{r} (when conveniently it may be hadd) & the chirurgions shall thinck it needfull to require.

Agreed unto.

10. That no Chirurgion or his man practize by giveinge inward phisick to the poore, w'hout th' app'bacon of the Do^{r}.[1]

Allowed.

11. That noe Chirurgion be suffered to p'forme the cures in this howse by his Boy or s'rvant w'hout his owne ov'sight or care.

Allowed.

12. That ev'ry chirurgion shall shewe & declare unto the Do^{r}, whensoev^{r} he shall in the p'sence of

who spoke of the "one and indivisible" science.—"Who," he says, in his Surgeon's Mate, "Who is hee that can cure a wound, a tumor, an ulcer, yea but an ague, with his hand only, without fitting medicines? Surely no man: Then it must necessarily follow that Chyrurgia, Dieta & Pharmacum, viz. Surgery, Diet and Medicines (I meane both outward and inward) are unseparable companions, and therefore all to be used in the art of curing man's body; and that in the person of one man."

[1] See Note above.

the patient require him, what he findeth, & what he useth to ev'ry externall malady; that soe the Do^{r} beinge informed may better w^{h} judgm^{t} order his p'scripts [1].

The Chirurgions p'test against this.

13. That ev'ry Chirurgion shall followe the direccons of the Do^{r} in outward oper'cons for inward causes, for recov'y of ev'y patient under theire sev'all cures, & to this end shall once in the weeke attend the Do^{r}, at the sett howre he sitteth to give dirreccons for the poore.

Agreed by y^{e} Chirurgions.

14. That the Apothecary Matron & Sisters doe

[1] We cannot wonder at the surgeons protesting at the inequality of the rules which secured secrecy for the physicians' prescriptions, and publicity for theirs. I cannot find how the protest was disposed of; but the probability is, that the surgeons were, as usual in those days, put down.

It is not a little strange to find Harvey, who was not more esteemed for his science than for the steadfastness and devotion with which he maintained the dignity of his order, adopting a practice which is now characteristic of quackery. The custom of his time made that honest which is now, more justly, shameful. In none of the many prosecutions of empirics by the College of Physicians, recorded in Dr. Goodall's history, is the secrecy of their modes of practice mentioned as an aggravation of their offences; nor is it, I think, in any considerable work of that period, regarded as a custom of questionable propriety. Indeed, it would be difficult to find better evidence that the custom of secrecy in practice was both usual and reputable than these rules afford, in which we find Harvey, the high-minded defender and benefactor of the College of Physicians, demanding it for himself, and the surgeons of the hospital, of whom two at least were "Masters in Surgery," protesting against the proposal to make their secrets known.

attend the Do^{r} when he sitteth to give direccons & pr'scripts, that they may fully conceave his direccons & what is to be done.

Allowed.

15. That the Matron & Sisters shall signifie & complaine to the Do^{r} or Apothecary in the do^{rs} absence if any poore lurke in the howse, & come not before the Do^{r} when he sitteth, or taketh not his phisick but caste it away, & abuse it.

Allowed.

16. That the Apothecary keepe secrett & doe not disclose what the Do^{r} pr'scribeth nor the p'scripts he useth[1] but to such as in the Do^{rs} absence may supply his place, & that wth the Doctors approbacon.

Allowed.

Cur. tent. septimo die Augusti Anno Dni 1634.

In p'sence of S^{r} Nicholas Rainton Knight P'sedent . . . . [*and others*].

CLARKE.

This day, —— Clarke Doc^{r} in Phisick is chosen to be assistant to Do^{r} Harvey Phisicon to this hospitall in the roome and place of Do^{r} Andrewes late deceased And it is ordered that he have the sallary of xxxiij^{ld} vj^{s} viii^{d} yerly paid to him for his paines duringe the plesure of this Court And the charge of the phisicon hath bine redd unto him, w^{ch} he hath

[1] See preceding Note.

p'mised in all ptes faithfully to observe & pforme And this hospitall doe order that after Do^{r} Harvey his death or depture, there be but one phisicon forthwards.[1]

[1] The journals contain no record of the retirement of Harvey from his office in the hospital; but, in the ledgers, which have been kept with great accuracy and minuteness ever since the granting of the charter, it appears to have occurred in 1643, for in that year this entry stands in its usual place for the last time :—

"Itm to Doctor Harvey Phisicon xxxiii^{l} vi^{s} viii^{d}"

The absence of any record of the event may be explained by the confusion of the times. At the period of his resignation Harvey was, probably, at Oxford, whither he had accompanied Charles I. and his two sons, after the battle of Edgehill in 1642, and where he appears to have resided till, in 1645, he was made, and for a few months remained, Warden of Merton College. In 1646 he returned to London; but I can find no indication that he ever again took interest in the affairs of the hospital; although while he lived so near it (in the Poultry, with his brother Sir Eliab) and the College of Physicians, where he must have passed much time, was yet closer at hand, it can hardly be doubted that he often visited the scene of his former labours, and watched the working of his code of rules.

The intention of having but one physician after the retirement of Harvey was soon abandoned; for in 1648 Dr. (afterwards Sir John) Micklethwaite was appointed assistant-physician to Dr. Clark.

THE END.

APPENDIX.

All the following extracts will be elucidated by giving some account of the Medical Staff of the Hospital during the time of Harvey, and in the century which followed the granting of the charter in 1547.

The Medical Officers in 1633, when Harvey's rules were adopted, were the following :—

William Harvey and Richard Andrewes, Physicians.

Joseph Fenton, John Woodhall, and Henry Boone, Surgeons.

James Mullins, Surgeon for the Stone.

Richard Eden, Guide or Surgeon of the Lock Hospital, in Southwark.

John Topliff, Guide or Surgeon of Kingsland Spittal.

Richard Glover, Apothecary.

Francis Worthe, Curer of Scald Heads.

And in 1628, the office of Bone-setter, or Surgeon for fractures and dislocations, had expired with Andrew Mathewes.

I cannot find, that any of these, except Harvey and Woodhall,[1] achieved anything on which a claim to present reputation can be

[1] John Woodhall, or Woodall, was the most distinguished English nava surgeon of his time. He was surgeon to the East India Company, and exercised a chief control over their medical affairs as well as over those of the Royal Navy. He was the author of the "Surgion's Mate, or a Treatise discovering faithfully and plainely the due contents of the Surgion's Chest, the uses of the Instruments, the vertues and operations of the Medicines, &c."—London, 8vo. 1617; which was also published in 1639, with the title, "The Surgeon's Mate, or Military and Domestic Surgery, discovering faithfully, &c." To the latter edition he annexed all his other works, namely :—1. "Viaticum ; being the Pathway to the Surgeon's-Chest, containing Chirurgical Instructions for the yonger sort of Surgeons ;" first published in 1628, and now enlarged. 2. "A Treatise, faithfully and plainely declaring the way of preventing, preserving from, and curing of that most fearefull and contagious disease called the Plague." 3. "A Treatise of Gangrena and Sphacelos : but chiefly for the amputation or dismembering of any member in the mortified part, against the doctrine of the

founded: I shall speak, therefore, only of the history and nature of their several offices.

The Physicians.—The records of the 19th of January, 1633, show that previous to that time the hospital had only one physician. In the deed of covenant of 1546, between Henry VIII. and the Mayor, Commonalty, and Citizens of London, on which covenant the charter of 1547 was founded, it was agreed that the corporation should find perpetually one physician and one surgeon, to be continually attendant on the patients of the hospital, and to minister to them, and to receive each £20 yearly.[1] But in 1548, when first the Hospital was brought into active operation, three surgeons, with salaries of £18 a year each, are enumerated among the officers of the hospital,[2] but there is no mention of a physician.

From this, as well as from the absence of any distinct notice of a physician, either in the journals or in the ledgers before the year 1567, I am induced to believe that the hospital had no physician till some time between 1561 and 1567, a period in which, unfortunately, there is a gap in the records.

The absence of a physician may have been compensated by the attachment of Thomas Vicary to the hospital; concerning whom I must diverge to say somewhat. He is commonly reported to have been the chief surgeon of St. Bartholomew's, as well as serjeant-surgeon to Henry VIII., Edward VI., Mary, and Elizabeth; and he is so called in the title-pages of several of the later posthumous editions of that

most ancient writers being approved safe and good according to the long practice and experience of John Woodall, Master in Surgery, &c."

A passage in the last-named work, p. 388, in proof, as he supposes of the excellence of his invention of cutting off only those parts of limbs which were already gangrenous, will afford an idea of the extent and success of dismembering at the Hospital in Harvey's time.

He says, "I may to God's glory and soe justly do I affirme for a truth that for the space of nere 24 yeares I have been a Surgeon in the Hospitall of Saint Bartholomewes, where I have taken off, and holpen to have taken off many more than one hundred of legges and armes besides very many hands and fingers, amongst all of which not one of them all hath dyed in the time of their dismembring, nor afterwards, through the exceeding effusion of blood, in the operation that ever I could gather or conceive, and furthermore I affirme that not above foure of each twenty dismembered but lived to have been healed and have beene delivered whole out of the Hospitall, notwithstandinge whatsoever their diseases have beene, and for that horrid cruell course mentioned by the aforesaid recited antients, of burning the ends of the stumps in the tender, living and most sensible parts, since I have knowne the Art of Surgery which hath beene by the space of 50 yeares that I have used it, I never saw it used by any in England or elsewhere."

[1] Charity Commissioners' Report, 32, part vi. 1840, p. 3. [2] Ibid. p. 7.

singular book of his—"The Englishman's Treasure, with the True Anatomie of Man's Body; Compiled by that Excellent Chyrurgion, Mr. Thomas Vicary, Esquire, Sergeant Chyrurgion," &c. Yet I suspect he was never surgeon to the hospital; for in a dedication to the earlier editions of this book, written by those who were surgeons of the hospital between 1576 and 1581, Mr. Vicary is not spoken of as a "surgeon," but as a "member" of the hospital; and in all the minutes, there is no mention of his holding or performing any surgical office. He appears, rather, to have been a resident superintendent of the general affairs of the hospital; as the following, among many strange records, show:—

"Jesus 1550. The xviiith day of October.
In the psence of Mr. Dobbys . . . Mr. Thomas Vycary . . . [*and others.*]

The same day it is agreed, that there shalbe so many gownes made of the whit rugge that is now in this house, as shalbe thought mete by the discressyon of Mr. Vycary, as well to s'rve for the wearyng & ease of y^{e} poore men as also of the poor women that be disseased withe the pocks, provided always y^{t} the same gownes or garments shall remayne styll to the use of the howse, & not to be carryed awaye by no maner of parson."

"The xvi day of Januarii 155½.

"It ys orderyd, that Thomas Vicary shalbe one of the assistaunts of this howse for terme of his lyff."

And again, on the 2nd of October, 1554, after a list of the President and governors, is this entry:—

"Thys day y^{t} ys orderyd that Mr. Vycary shall have the oversyte of all suche offycers as be wythin the hospytall, in y^{e} absence of the Governors, and to reforme suche thyngs as he seythe amys in any offycer & to make reporte at the Gouernors at theyr next metyng."

That he was a resident officer is proved by a notice in 1550 for the repair of his house; and by his being annually supplied with a livery or uniform: thus, in the discharge account of 1552–3, is an entry,—

"Fyrst, iiij yardes of fyne newe collour for Mr. Vicar's
(lyverye), at xii a yarde . . . . . xlviii^{s}."

And in the following year—

"For Mr. Vicaryes liverye . . . . . liii^{s}."

And this livery, of much more costly material than that provided for any other officer, he received every year till 1561.

In many of these circumstances, Mr. Vicary's position resembled that of the physicians to the hospital for several subsequent years; but in

all of them, it differed from that of the surgeons; so that there seems good reason to believe that, as I have said, he was in place of a physician to the hospital for some years after it received the Royal Charter.

It is certain that in 1567, when Mr. Vicary's name no longer occurs in the records, a physician, Dr. Lopus, had been appointed. He, also, was a resident officer; for between 1567 and 1575, there are various orders for repairing his house and gardens, and, on Nov. 9, 1575, to "board his parlour" in consideration that he should be "more painfull" in his care of the poor. He did not, indeed, receive a livery from the hospital; but in lieu thereof, he had forty shillings a year; which, with his house, and a certain allowance of "billetts and coales," were given to him for a salary.

This plan was interrupted for a time, while Dr. Lopus lived away from the hospital. But on the retirement of his successor, Dr. Turner, it was again adopted, and Doctor Timothy Bright[1] was elected to have the office of physician, with the house and fee thereto belonging. This plan of having a resident physician was continued till 1599 or 1600, when Dr. Doyley, who was then physician, asked for £20 a year, "according to the King's foundacon;" and it was granted to him, on condition of his giving up the house he held. And with this £20 a year he received in commutation "for his fewell v^{li} and for his liv^{e}y xl^{li}."

I think Harvey never received any thing in lieu of a livery; and he certainly never resided as physician to the hospital, though the minutes of 1614 show that it was considered very desirable that he should do so. They also show when and for what the £25 a year was increased to £33, 6s. 8d., and then given to each of two physicians. The same plan was continued till 1749, when, first, three physicians were appointed, and considerable changes were made in both their duties and their rewards.

The nature of the physician's duties, after he ceased to be a resident

[1] Dr. Timothy Bright was the author of several small Treatises on Medicine, namely, 1. "Medicinæ Therapeuticæ Pars: de Dyscrasia Corporis humani," 8vo, London, 1583. ¶ 2. "A Treatise of Melancholie . . . with the Physicke-cure thereof and spirituall consolation for such as have thereto adjoyned afflicted consciences," 12mo, London, 1586 and 1613. 3. "Hygieina, id est de Sanitate tuenda, Medicinæ pars prima," 8vo, Francof. 1588. 4. "Therapeutica: hoc est de Sanitate restituenda, Medicinæ pars altera," 8vo, Francof. 1589. The work on Melancholy implies an inclination which the author, after he was dismissed from his office in the Hospital for neglect of duty, obeyed; and very wisely, since, so far as I can judge, his theology was much better than his physic. He entered Holy Orders, and according to Dr. Watt (Biblioth. Brittann.) became a divine of some eminence, and Rector of Methley in Yorkshire. Watt also states that he edited Fox's Acts and Monuments of the Church, in folio, in 1589.

officer—for before that time he probably exercised some degree of the same superintendence as Mr. Vicary did—are evident from the rules drawn up by Harvey, and from the charge (p. 3) the date of which shows that it was first used on the appointment of Harvey himself. These duties were limited to the prescribing for such patients as the surgeons thought fit, or were required, to bring for the physician's advice; and though, doubtless, in cases of emergency, the physician would visit a patient in the wards, yet it was no part of his necessary hospital-duty to do so. Neither had he any patients under his sole care. Harvey's fifth rule implies an anxiety, on the ground of economy, to prevent the admission of all medical cases, and of all such surgical ones as would need much medical treatment or attendance.

It was only very gradually that this system was changed. It is mentioned,[1] that in 1564 the physicians had eight out-patients under their care, which number was in 1670 increased to forty; but in 1675, the number was ordered to be reduced to twenty-five, the surgical out-patients being by the same order similarly reduced. In 1710, 100 out-patients were allowed; in 1715, 150; in 1749, 200; and so on.

Gradually, also, the physicians were required to give more attendance on the cases; first, to sit for prescribing twice, and then three times, instead of once, in the week; next, in 1729, they were required, once in every week, to go round the hospital with the surgeons and the apothecary, and with them to see all the patients. At length, the custom seems to have been slowly established of admitting patients to be entirely under the physicians' care; and in 1749[2] they admitted, on an average, sixteen men and fifteen women in-patients; and prescribed, on an average, for fifty men and fifty women in-patients every week.

But most or all of this was done by assumed custom, not by rule; and it was not till 1749 that there was made a distinct order of the court, that the physicians must visit and prescribe for the poor in the wards wherein such poor might be placed, and must attend the almoners at the admission of patients, and advise who should be admitted under their care. It was some years later before the surgeons had the sole charge of their patients. For, even in 1754, when Mr. Pott had been surgeon for five years, there is recorded a renewal of an old order by which the surgeons were prohibited from prescribing any internal medicine, except "mercurial physick or purges."[3]

The Surgeons.—It has been already said that in 1548 it was resolved to appoint three surgeons. The custom appears to have pre-

[1] In a Report of the Court, Feb. 22, 1749-50.
[2] According to the Report last cited.
[3] Order of a Court, Aug. 22, 1754.

ceded the resolution; for even in 1547 there were three surgeons, as appears by the discharge account for that year.

"*Money paide to the Surgeons due at Michellmas, An°* 1547.

"Item gyven in rewarde to Richard Westall for his paynes taking amonge the poore . . . . . xx^{s}.

"Item paide unto George Vaughan Surgeon for hys quarter wagies, due Michellmas An° 1547 . . . . xxx^{s}.

"Item, paid to Thomas Baylie for his paynes taken to dresse the poore the space of vi weekes . . . . . xx^{s}.'

The £18 a year promised in 1548, was not at once paid; for in the account for 1547–8, Mr. William Garter, one of the surgeons, received only £5 for "a holle yeres wages;" Mr. Thomas Bayly had £12, and Mr. George Vaughan £12. In the next year, each received £16; in the next £18; and of this last increase of salary there is a notice (the second which is entered in the journals at the hospital) in the orders of the court.

"The xviii daye of October [1549].

At the assemb^{l} yn the p'sens of Mr. Dobys . . . [*and others.*]

"Agreyd at the same tyme at the request of the iij surgeons, for bycawsse things p'teynyng to their facultey be very dere that they shall have ev'ry one of them xviii^{l} a yere and that to be payd them q'terly from Mykelm's last passed."

At various later times the salaries were increased; for instance, on the first of October, 1552, to £20 a year; in 1610, to £30 a year, besides £6 a year for each surgeon for the cost of his salves, and a certain portion of the apparatus necessary for their pharmaceutic works, such as "a greate kettill wayeing xxxxiiii lb. at ix^{d} the pound for the surgeons to boyle with."

For many years, also, one or more (usually the senior surgeons) were allowed extra charges, or received an additional stipend, for patients cured at Bridewell, the Savoy, or elsewhere out of the hospital. Besides, they were provided with scarves, as it thus appears in an order on the 21st of January 155$\frac{2}{3}$.

"This day ys agreed that Rybbans and Scochyns shalbe pvyded for the Surgyons of the hospitall of lyttyll Saynt Bartholomewes, the same rybans & Scochyns to remayne styll in the Hospitall and at the charge of the said hospitall."

The nature and purpose of which ribbands and escutcheons is somewhat explained by the bills for them; thus on the 15th of March 155$\frac{2}{3}$—

"this day yt ys orderyd y^{t} 24 Scochyns of y^{e} armes of y^{le} Cyttye be made at IIII^{d} y^{e} peace";]

and in the discharge account for 1552–3,

"Item for III Rebands of whyte and greene[1] sylke and VI Scochyns of th'armes of the Cytie to th'use of Surgyons of this howse and for XX Scochyns for the bedills and Susters . . . . . XXX^{s}"

And again in 155$\frac{4}{5}$,

"Item paid to William Smythe broderer for X Scochyns for the officers of the howse . . . . . VI^{s} VIII^{d}"

And again in 1575,

"This daie order is taken by the Courte that W^{m} Clowes and Edward Bayley Surgions shall have XIII^{s} IIII^{d} to buye them bendes to were at Easter to go wth the children of the hospitall to the spittell."

With respect to the nature and extent of the surgeon's duties in the first century after the granting of the charter, Harvey's rules give a better account of them than could be gathered from the journals. The whole of the 100 beds which the hospital then contained were devoted to surgical cases; and the surgeons were the only constant medical attendants at the hospital; but their practice was limited and controlled by the physicians, and was encroached upon by the "surgeon for the stone" or special operator, and by the bone-setter, into whose hands some of the best cases would fall; and it was liable to be invaded by others from without. I can find but little account of the class of cases most commonly admitted, or of the treatment they received: the notes inserted (pp. 25 and 19) from the works of Woodhall and Clowes afford some information; but as the custom long continued, in accordance with the charter, of employing eight or ten beadles to bring to the Hospital "such poor, sick, aged, and impotent people as shall be found going abroad in the city of London, and the suburbs of the same, not having wherewith to be sustained;" it is probable that many in the Hospital were such as would now be inmates of workhouses.

The Surgeon for the Stone and Ruptures.—For some years after the granting of the charter, it appears to have been usual to employ a lithotomist as often as his services were needed. Thus, in the first year's account, at Michaelmas, 1547, there stands

[1] The green and white were probably chosen for the colours of the ribbands, because they were the family colours of the house of Tudor. A green staff with white letters is still, "conformably to ancient custom," presented to each governor of the Hospital on his election.

"Inprimis, paide to Martyn Surgeon for cuttyng of a boye of the Stone . . . . . x^s"

But there was no regular appointment of a lithotomist; and I think the operation was very rarely performed in the hospital till many years later.

In 1589, October 25, is an order,

"This day order is taken that Mr. Frederick shall have IIII^li^ paid him for cutting a wenn of a woman and too men of ruptures."

This Mr. Frederick afterwards became surgeon to the Lock in Southwark, from 1590 to 1604, and received £4 a year. He, however, being dismissed for neglect of duty, was succeeded in the office of guide or surgeon to the Lock by Robert Murrey, who is afterwards called (March 7, 1611–2) "Chirurgion to this howse for the cuttinge of the Stone and Ruptures of the poore of this Hospitall."

Mr. Murrey held this office from 1604 to 1622; his salary being increased in 1611 to £6 13s. 4d.; and he was succeeded by Mr. James Mullins, to whom, after a conference between the Governors of Saint Bartholomew's and those of St. Thomas', duties were assigned in the following order:—

"Vicesimo die Januarii Anno Dni 162⅔.

"It is ordered by the Governors of this Hospitall that James Mullins Chirurgion in consideracon of his care and paynes which he is to take in cuttinge and cureinge of poor diseased p'sons of the Stone, and the greifs and Malladies hereunder named, brought to the sev~all hospitalls of S^t^ Barth~ewes and S^t^ Thomas in Sowthwarke, shall have the yearly stipend of xxx^li^ p. anm from x~xmas last past soe longe as he shall discharge the same cures to the good likeinge of the Governors of the said hospitalls viz. xv^l^ of his said stipend to be paid him quarterly from this hospitall and the other xv^l^ from St. Thomas Hosp^ll^. and he is alsoe to be allowed two pounds of towe for every patient for theire more easie and warmer dressinge.

"For the Annuall stipend of thirty pounds I under take (w^th^ God his helpe) my best skill and experience the manuall operacon and chirurgicall cuer of these insuinge Maladies viz.

"The Cureinge by Insition the Stone in the yard or Bladder.

"The cureinge of the rupture or falling downe of the Intestines or gutts into the Codds by Cuttinge.

"The Cureinge by Insition the Carnosity or fleshie substance in the Codds.

"Alsoe the Curinge of Wenns by Insition.

"Desiringe that for every patient I may have the allowaunce of 2 pounds of towe for theire easier and warmer dressinge."

By the account for 1629, it appears that there were extra charges for the diet and maintenance of persons cut for the stone, at the rate of about thirty shillings a month. Other notices show the consideration in which the operation was held. Thus in 1654 (May 12) is an order that the stone should be cut for publicly; in 1714, is one that the stones should be hung up in the Compting House according to ancient custom; and in 1722, is an order to put up a new rail, because of the press of the company at the cutting for stone.

The office of Lithotomist, as distinct from that of surgeon to the Hospital, was abolished in February $173\frac{0}{1}$, when on the death of Mr. John Dobyns, and the retirement in anger of Dr. John Bamber, Mr. Freeke, one of the surgeons, and Mr. Biggs, Mr. Webb, and Mr. Nourse[1], the assistant surgeons, declared their readiness to perform the operation. Since that time the appointment to the surgeoncy has always included that to the office of lithotomist to the Hospital.

The Surgeons of the Locks.—[See p. 16].

The Bone-Setter.—By the accounts at Michaelmas, 1598, it appears that the first appointment of a bone-setter to the Hospital took place about Michaelmas 1596. John Isard, or Izard, was then appointed at a salary of £8 a year, in addition to which he was allowed to charge separately for certain cases. He had in 1591 been employed in the same capacity, but for only one case; "for the healinge and curinge one James Jones who had his legge broken," he received fifty shillings; and in 1585, he had twenty shillings for the healing of a like injury in one Morgan Jones.

In 1612 a further gratuity of forty shillings a year was granted to Mr. Izard: and in 1619 Andrew Matthewes was appointed to be his assistant, and to succeed to his place at his death or other departure. This took place in 1625; but when Mr. Matthewes was appointed, it was ordered that whenever he ceased to hold the office no fresh election

[1] This was Mr. Edward Nourse, and there is reason to believe that it was chiefly at his instigation that the change was made. His father, Mr. John Nourse, was a lithotomist of some renown; for his portrait, representing him with a knife in one hand and a large calculus in the other, is in the Royal College of Surgeons of England. Mr. Edward Nourse was the first lecturer on anatomy in St. Bartholomew's. He began his Lectures in 1734 or earlier, and published in 1729 and 1748 a "Syllabus totam Rem Anatomicam complectens," addressed "Studiosis Chirurgiæ in S. Bartholomæi Nosocomio." Percivall Pott was his pupil and prosector.

should take place, but the surgeons themselves should perform the duties; and he ceased to receive the salary at Midsummer in 1628.

The Apothecary.—From what has been said of the office of the surgeons, it will appear probable that they for many years themselves supplied, and at their own cost, the greater part of the materials necessary for the dressings of their patients. This is confirmed by what is now to be said of the charge of the apothecary. I think he must have been first appointed at the same time as the office of physician was established; for there is no mention of an apothecary, or of such materials as one would supply, in any of the accounts before that for the year ending 1567. In that year there is this entry:—

"Paid by boke the potticarye the xiith of Maye A^{o} 1567 . xx^{l}.
"Paide him more by bill the xiiith day of June A^{o} 1567 . xix^{l} x."

In 1569, there is, in a corresponding place:—

"Item p^{d} the bill of the potticary to xxiiiith of November A^{o} 1569 for a halfe yere's stoffe s'ved in for the poore ended at Michellmas A^{o} 1569 p. quittance . . . . . x^{ld}."

And in 1570:—

"Item paid to the poticarye for stoffe received from him by the surgeons and the pisition for one holle yere ended at Michellmas A^{o} 1570 . . . . . xx^{ld}."

And in 1571:—

"Paid Will^{m}. Weston potticarye for his fee for svinge the house of droges for the poore for one hole yere ended at Mich$^{\tilde{a}}$s 1571 . . . . . xx^{ld}."

The three payments last named are in correspondence with an order of the Court, on the 29th of May 1568. In 1575, it stands:—

"Item paide to Wylliam Weste potticarie for the poore for one whole yeres wages for p$^{\tilde{c}}$gacions lecturies, confeccons, plaisters &c accordinge to an order of Courte . xxvi^{ld} xiii^{s} iv^{d}."

to which yearly salary of £26, 13s. 4d. he was appointed on the 9th of August 1572.

The same plan, or very nearly the same, appears to have been continued till 1588. But, on the 26th of March, 1586, this occurs:—

"This day complaint hath bene made by the appothecary of this house, that he is charged wth div$^{\tilde{s}}$ ointementes, pulteses, & plasters for the poore w^{ch} he ought not to doe, and further he alleadgeth, that the

same belongeth to the surgions to provide, and not the pothecarye, w^ch^ complaint being hard by this court the gov'nors imediately caused M^r^ Bright the phisicon to this house to deliver his opinion therin w^ch^ of them ought to finde the ointemente, plasters, and pulteses for the poore, w^ch^ M^r^. Bright after the hering of the cause deliv'eth his opinion that the Apothecarye is onely but to finde such medicines & drinckes as are ministred inwardely unto any of the poore & not otherwise, And the Surgions to find all other stuffe, as plasters, ointements, pulteses & such like things for the poore, as are to be ministred outwardly. . . . ." [whereupon the court ordered each to provide his own accordingly].

And on the 5th of October, 1588, this entry is made, by which the charge of the apothecary at this time is yet more nearly defined :—

"This day Roger Gwynn Apothecarie came to this courte & made request to the Gov'noures of this house, with the concent of M^r^. Doctor Bright & prayeth that his stipend may be amended and made as much as he hath in S^t^ Thomas Hospitall, & offereth to serve & to finde a purging diet for such & so manie of the poore of this house as shall have occacon to use it, in the spring of the yere, for the space of three weekes togeather, & a drie diett for a fortenight once in the yere, And further offereth uppon urgent occacons to use the like diet for viii or xii p~sons in the fall of the leafe, or at any other time when he shalbe appointed by the phisicon, Surgions, or gov'noures of this house, And also he offereth to find yerelie to such poore as shall haue neade, all such oiles ointements & plasters as are neadefull & appointed by the phisicon: And further for the better & more speadie Recov'rie of the poore, he also offereth to finde wekelie throughout the yere, sufficient good & holesome skurvigrasse for the poore, to use dailie, to stampe & streine the same for drinck; And in consideracon that the said Gwynn shall effectuallie p'forme the offer above menconed, Order is taken by this Courte that the said Roger Gwynn shall have . . . . xl^l^ a yere, the same to be paid quarterlie, & this graunt to continewe so long as the gov'noures of this house shall see the poore better looked to & soner healed then heretofore they have beene used, & also order is taken that the Surgions shall not further charge the Apothecarie with ointementes & plasters, other then such as the gov'noures & phisicon of this house shall thinck necessarie."

The sum yearly paid after this, was £37, 12s.

For some years following, there were no material changes; but from 1609 to 1614 there are numerous charges amounting to from fifteen to thirty pounds a year for "extraordinary salves," &c., paid to one who was not apothecary to the hospital; and from 1604 to 1613, the

Hospitaler, or Chaplain to the hospital, received at the rate of from ten to forty shillings per month for diet-drinks, which he made and supplied to the patients—a feeble revival of the union of the offices of the priest and the physician.

On the 28th of July 1614, Mr. Gwynn retired or was dismissed, and it was determined to have a resident apothecary, by whom all the "oyntments, salves and Physicke" should be prepared, and who was to have £16 a year, besides his residence. From this time the Governors purchased the materials for the apothecary's use. For many years his account is charged in monthly bills, which amounted in 1633 to £254, 2s. 3d. for the year; and (as if Harvey's rules had had good effect) in 1635, to £161, 9s. 9d.; and in 1638, to £123, 11s. 10d. This plan appears to have been continued with no material change, except the gradual augmentations of the apothecary's salary till it amounted to £40 a year, through all Harvey's time and for some years later.

I cannot find when the apothecary first began to have a charge over the patients, but there is an entry in the Journal of December 23, 1665, according to which the physicians having absented themselves from the hospital during the existence of the plague, one of the surgeons, Thomas Gray, and the apothecary, Thomas Francis Barnard, who attended the patients, were voted a gratuity of £30 each.

The Curer of Scald Heads.—Separate charges for the cure of this disorder may be found in the accounts of the hospital at early times; as, for example, in 1554–5:

"Itm, paid to Elizabeth Hall for helying the scald hed of John Turner . . . . . iii^{s}."

And—

"Itm payd to a poore woman for helyng of a boye's head . iiii^{s}.
"Itm paid to her in ernest to amend another scald head . iiiis."

In 1621, a distinct appointment was made (January 26):

"It is graunted that Frauncis Holcombe shall have for the cure of every one of the poore of a scald headd comitted to her charge by the Governors of this howse twenty shillings soe that shee pfectly cure the ptye."

Frances Holcombe being a poor widow had five pounds lent her in advance, which she was to repay by a deduction of ten shillings from the charge for each cure, till she liquidated the debt. But she was soon enriched; for in every following year she received more than any other member of the medical staff. For example, she had—

In 1623 . . .	£27
1624 . . .	34 5s.
1625 . . .	40

and at this time, I think the excellence of her prospects must have delivered her from her widowhood; for there is no appearance of a new appointment, but hereafter the name is not Frances Holcombe, but Frances Worth; and one Ellis Worth, and Frances his wife, now appear as holding a lease of certain property near the hospital. Her income steadily increased; and she received—

In 1635	£125
1636	99
1638	102

that is, in the same year in which the apothecary's whole bill was only £123, 11s. 10d.; and this goes on; thus—

In 1639	£119
1640	85
1642	126

At length (whether the disease or the remedy were exhausted does not appear, but) the office grows less and less profitable; and in 1697 it ceases to be mentioned, and scald heads are no longer an item in the treasurer's discharge account.

SAINT BARTHOLOMEW'S HOSPITAL REPORTS.

OUR HOSPITAL PHARMACOPŒIA AND APOTHECARY'S SHOP.

(Continued from Vol. XX.)

BY

W. S. CHURCH, M.D.

In my former communication I sketched the rise of the Apothecary's shop within the walls of the Hospital, and gave a brief account of the earliest of our Hospital Pharmacopœias; one discovered by Dr. Moore among the MSS. of Dr. Edward Browne, dated 1670, and the other transcribed by Theophilus Philanthropos in 1739, and published in his "Physician's Vade Mecum." That period appeared to me a good one at which to break off, as the next Pharmacopœia of which I have been able to find a copy is dated 1764,[1] eighteen years after the publication of the fifth edition of the Pharmacopœia of the London College of Physicians. There is, however, no doubt that our Pharmacopœia underwent revision long before that date, and I found in the Library of the Royal College of Surgeons a manuscript copy of our Pharmacopœia dated 1755, which is identical, or nearly so, with that given in the "Modern Practice." Our physician, Dr. Richard Tyson, took much interest in the

[1] Modern Practice of the London Hospitals. Printed for T. Carte and W. Nicholl in St. Paul's Churchyard.

preparation of the fifth edition of the London College, and seems, from the notes he has left, to have been one of the Fellows of the College who assisted in revising it for the press. He would, in all probability, have early laid before the Governors the necessity for revising the Hospital Pharmacopœia.

I intend in the following pages to give some account of the Hospital Pharmacopœias subsequent to 1746, and also to trace the further progress and expansion of the Apothecary's shop within the Hospital. Before doing so it would be well to recall to the memory of my readers the reformation which took place in English pharmacy during the twenty-five years that elapsed between the publication of the fourth edition of the London Pharmacopœia in 1721 and the fifth in 1746.

Pharmacy up to that date had followed the old traditional lines, which had been adhered to from the days of Hippocrates, Galen, and the Arabian physicians; the learned colleges had never had the courage to break away from the superstitious element which had played so great a part in the medicine of the dark ages. The world in general, as well as the practitioners of the healing art, have but a very slight idea of the debt of gratitude they owe to the Committee [1] of distinguished men appointed by the London College to prepare the fifth edition of its Pharmacopœia, for the courage they showed in sweeping away many of those "inartificial and irregular mixtures which the ignorance of the first ages introduced," [2] as well as all, or nearly all, the disgusting substances, "for the most part superstitiously and doatingly derived from oracles, dreams, and astrological fancies," [3] which up to that time disfigured our Pharmacopœias. The first London Pharmacopœia was published by our College in 1618, and it is generally accepted that the first Pharmacopœia which was published under any public authority was that of Valerius Cordus, under the sanction of the Senate of Nurenberg in 1542. Collections of formulæ had been long in use, but they had no official stamp or authority, and were drawn up entirely on the responsibility of the compiler. Of these, the best known were the two Antidotaria, one known as that of Mesue or

[1] The Committee was appointed on the 22d of December 1738, eight years before the publication of the Pharmacopœia, and consisted of the four censors, Drs. Gardiner, Nesbit, Burton, Whitaker; the Treasurer, Dr. Wharton; the Registrar, Dr. Martel; and Drs. Plumptre, Wilmot, Hopwood, Banks, Letherland, and Bedford. Of these, particular mention should be made of Dr. Plumptre, President of the College from 1740–1746, of whom Sir George Baker in his Harveian oration thus speaks: "Qui pharmacopœiæ nostræ corrigendæ tam sedulo invigilaverit, inconditasque medicamentorum farragines et inexplicabiles mixturas tam prudenti delectu, tam eleganti simplicitate temperavit."

[2] Preface to the Pharmacopœia Londinensis, 1746, translated by Dr. Pemberton. [3] Ibid.

Johannus Damascenus,[1] the other as that of Nicolaus, and these two names we constantly find appended to formulæ, not only in our own Pharmacopœia, but also in those of all the other European colleges. In the first edition of our London Pharmacopœia Mesue's name is attached to 109 formulæ, that of Nicolaus to 44. Galen has 13 attributed to him. Of the more modern authorities, Fernelius[2] has the largest number, 14; whilst of physicians living at the time the Pharmacopœia was drawn up, Sir Theodore de Mayerne heads the list, six having his name attached to them. In the collection of formulæ

[1] There has been much controversy among medical writers over Mesue, who he was and when he lived. Dr. Pemberton, in his Narrative of the Proceedings of the Committee appointed by the College of Physicians to revise their Pharmacopœia, attributes (page 17) all the formulæ bearing his name to Johannes Damascenus, and fixes his date as in the eleventh century, because he quotes Avicenna, and is himself quoted by Constantinus Africanus. Dr. Freind, on the other hand, thinks that Mesue and John of Damascus cannot be the same (Hist. of Physick, vol. ii. p. 220, 2nd edition), and thinks that Mesue lived much earlier. According to Freind, Mesue was the son of an apothecary of Nisabur or Jondisabur, the capital of Chorasan, and bred up by Gabriel, the son of Bachtishua. He was a Christian of the Nestorian sect, and was employed by the Caliph Rashid in explaining and interpreting the older physicians. Freind places his death about the year 846. The second Mesue is, as already mentioned, thought by some to be the same person as John of Damascus; by others (*vide* Eloy, Dict. Hist. de la Med.) to have been his father. Freind appears to be of opinion that Johannes Damascenus lived as late as the latter part of the twelfth century (vol. i. p. 280), but the most generally received opinion seems to be that the second Mesue, whether he was the same as Johannes Damascenus or no, lived somewhat earlier than that, and it is usually stated that he was a Christian born at Maridin on the Tigris, and studied physic at Bagdad, and that he subsequently practised medicine at Cairo, and died there in 1015 aged ninety (*vide* Eloy). Almost equal uncertainty is expressed by the historians of medicine as to the true authorship of the formulæ which bear the name of Nicolaus. At least three, if not four, compilers bore this name; the two oldest Antidotaries bearing the names of Nicolaus Magnus and Nicolaus Parvus, but the epithets parvus and magnus apply rather to the Antidotaries themselves than to the authors, for that of Parvus seems to be an epitome of the larger, and both are attributed by Saladinus to Nicolaus de Salerno. At a later date followed the Antidotarium of Nicolaus Myrepsus, called also Alexandrinus, who lived in the thirteenth century, and copied largely, if not entirely, from the older Nicolaus. At a still later date, 1497, Nicolaus Prepositus of Tours wrote a general dispensatory to take the place of these older collections, and it was through the medium of his work that the formulæ were known to the bulk of the profession of that and later ages.

[2] Fernelius (Jean François Fernel) was the most celebrated physician of the sixteenth century. Two places contend for the honour of his birthplace, and two different dates are given for his birth. Some authorities place his birth in the year 1497, others in 1506. Mézéray is of opinion that he was born at Montdidier in Picardy, whilst Planchy gives Clermont-en-Beauvoisir as the place of his birth. When about thirty years of age he settled in Paris, and for some time refused to become a court physician, on the ground that it would interfere with his studies. He eventually became physician to Henry II. of France, and acquired a very large practice, so that at the time of his death in 1558 he was possessed of a vast fortune. His best known work is "De Abditis Rerum Causis," which went through fifty editions. His learning and scholarship was so great that the physicians of his day said of him "Fæces Arabum melle Latinitatis condidit."

given by Fæsius [1] in his Pharmacopœia dated 1561, the number of preparations attributed to Mesue and Nicolaus respectively closely agree with those given above.

The materia medica of these old Pharmacopœias is gigantic, the number of simples enormous; between six and seven hundred are enumerated as officinal. The mineralia, on the other hand, are comparatively few in number, but the Pharmacopœia was enriched by the animalia; whole animals as well as portions, their secretions and excretions, being included in the official list.

Many of the substances obtained from the animal kingdom are too disgusting to drag again to the light of day; others, on the other hand, though repulsive to our present ideas, were perhaps the readiest means our forefathers possessed for obtaining valuable remedies, such as the salts of ammonia. The complexity of some of the formulæ is almost inconceivable. The Antidotaria magna Matthioli adversus venena et pestem, of the first London Pharmacopœia, contains 131 ingredients, some of which are themselves compound. The belief in magic had not died out even among the learned; and hence we find portions of animals, such as the bone of a stag's heart, the calcaneum of a hare, &c., used as charms. An amusing instance of this occurs in Pepys' Diary, January 30, $16\frac{6}{6}\frac{4}{5}$:—

"Homeward, in my way buying a hare and taking it home, which arose upon my discourse to-day with Mr. Batten in Westminster Hall, who showed me my mistake, that my hare's foot hath not the joynt to it; and assures me that he never had his colique since he carried it about him; and it is strange how fancy works, for I no sooner handled his foot, but I became very well and so continue."

And the next day he ends his entry thus:

"Now mighty well, and truly I can but impute it to my fresh hare's foot." [2]

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[1] Fæsius published at Basle, 1561, the best work on pharmacy of the sixteenth century. He was born in 1528 at Mayence, and went when very young to Paris, where he studied Greek, and is notable as being one of the best commentators on Hippocrates. He became chief physician to Charles III., Duke of Lorraine, and eventually settled at Metz, where his son and grandson also acquired fame as physicians. Fæsius' work may be regarded as almost the last of the collections which did not receive an official stamp from some responsible body; for although addressed to the Senate and people of Lorraine, it does not appear that his formulæ were what is now termed officinal. His work was published in 1561, and in it the various formulæ are divided into classes, and he gives definitions—the best I know anywhere—of confections, electuaries, zulaps, serapia and syrups, sapæ or robs, &c. Those who have the curiosity to look into his work will find added to the formulæ the names of the supposed introducers of the preparations into medicine; by far the most frequent name is that of Mesue.

[2] I do not know when a hare's foot was first carried as a preventive for the colic; almost all the charms of a like kind seem to have existed from very early

From these entries it appears that Pepys, who was a most matter-of-fact, unimaginative sort of man, regarded his hare's foot much in the same doubtful but half-credulous way that many now speak of homœopathy or spirit-rapping.

The retention of so many of these magical substances, and particularly of the complex formulæ in the authoritative Pharmacopœias of the European colleges, is very remarkable, and shows strongly the force of habit and the conservative character of our profession.[1] The London College in 1746 had the courage to break through the old traditions, and not only removed most of the magical and disgusting substances which had for so long held a place in the materia medica, but also very greatly reduced the number of simples; only 208 occur, as against 645 in the fourth edition, dated 1721. Great and radical as were the changes then made by the London College, the belief in some of the old formulæ and mysterious drugs was too strong for them all to be swept away, and we find such formulæ as Mithridate or Damocrates's confection with 43, the Theriaca Andromachi, or Venice treacle, with 62 ingredients; whilst among the animal substances, woodlice, scink's bellies, vipers, and bezoars still held their place. The retention of the bezoar[2] is a

times, and are to be found in that storehouse of curious information collected by the second Pliny in his Natural History of the World; but I find there no mention of the calcaneum or foot of the hare. But Pliny does refer to the plant hare's foot, "which the Greeks call Lagopus," an herb usually growing among corn, and ascribes to it astringent and binding properties. It seems to me not improbable that by some confusion the foot of the hare took the place of the herb, hare's foot or Lagopus.

[1] What the feeling of the best instructed and ablest physicians was on this point is well shown by the following extract from Dr. Freind:— "As to the composition of medicines, though I doubt they are often multiplied beyond measure and sometimes without judgement, yet I see no reason that the whole tribe of them should be intirely descarded. For though I believe we cannot exactly calculate the virtues of a compound from the proportional qualities of the simples, as Alkindus pretended to do, yet still thus may something result from a mixture which cannot be found in any one of the ingredients. Mithridate and treacle of Andromachus have been in use for near two thousand years, and are still allowed to be good medicines by the ablest judges; and yet, were we to examine every particular, we should probably be at a loss by any force of reasoning to comprehend why this or that drug should have been made choice of, or how it could add to the efficacy of the medicine."—*Hist. of Physick*, 2d edit., 1727, vol. ii. pp. 209–210.

[2] Bezoars, according to Dr. Freind, vol. ii. p. 106, were introduced into medicine by Avenzoar for the treatment of jaundice. Its money value seems at one time to have been enormous, notwithstanding that neither in Avenzoar's time nor in the eighteenth century was it known what bezoars were. Avenzoar believes that they were found in the gland situated near the eye of stags; later authorities say that they were found in the stomach, or rather omasum, of the animal they call Cervicapra. Oriental bezoar is ordered in our London Pharmacopœia, but, according to Dr. Dovar (the originator of Dover's Powder), the supply came from the American Continents. In 1733, in the "Antient Physician's Legacy to his Country," he says: "Bezoar, that petrified matter of disease cut out of the paunches,

striking instance of *omne ignotum pro magnifico.* Pemberton in his Narrative says: "Being a costly material, it is for the most part clandestinely left out of this medicine (*pulvis è chelis cancrorum compositus*) upon supposition that

"Physicians do not in every case where this powder is described depend in any particular manner upon this express ingredient."

The complexity of many of the common medicines must have greatly facilitated adulteration; and we have Smollett's evidence that it was common enough among the apothecaries of his time, for he writes, probably from his own personal experience, as follows of Mr. Lavement in "Roderick Random:"—

"His expense for medicines was not great, for he was the most expert man at a succedaneum of any apothecary in London, so that I have often been amazed to see him without the least hesitation make up a physician's prescription though he had not in his shop one medicine mentioned in it. Oyster-shells he could convert into crab's eyes; common oil into oil of sweet almonds; syrup of sugar into balsamic syrup; Thames water into aqua cinnamomi; turpentine into capivi, and a hundred more costly preparations were prepared in an instant from the cheapest and coarsest drugs of the materia medica."

Having thus briefly mentioned the very great reformation which took place in the London Pharmacopœia in the fifth edition in 1746, I must now return to our own Hospital Pharmacopœia. I have no doubt that it was revised immediately after the publication of the fifth London one, but I have not been able to obtain any printed copy earlier than 1764. By that time it had undergone such a complete change that only four formulæ, and those not important ones, remain the same as in that transcribed by Theophilus Philanthropos in 1739.[1] It is divided into two parts—Pharmacopœia Nosocomii Divi Bartholomæi and Pharmacopœia Chirurgica in usum Nosocomii Divi Bartho-

galls, and bladders of some of the nastiest creatures in being, as Gua-nanoes, a monstrous beast between a camel and a he-goat, black cattle, hogs, goats, and an ugly animal they call Pacos D'la Tierra, monkeys, porcupines, and all such nasty animals. Of this I have been credibly informed by persons of the best reputation both in the East and West Indies." From this it seems most probable that any concretions found in the bodies of animals were sold as bezoars, all probably with equal effect.

[1] In the Library of the Medico-Chirurgical Society is a copy of the "Praxis Medica et Chirurgica Nosocomiorum Civitatis Londini" dated 1767. The Pharmacopœia in it is identically the same as in the "English Modern Practice" dated 1764. The copy is an interesting one, as having once belonged to Dr. Richard Tyson, the younger, at that time one of the physicians to the Hospital. In the Dublin edition of the "Modern Practice" our Pharmacopœia remains unchanged, so that the remarks made apply to all three editions (*vide* vol. xx. of these Reports, p. 288 *et seq.*), and to the MS. copy in the College of Surgeons dated 1755.

lomæi. The latter for the most part contains lotions, ointments, plaisters, and eyewaters; it also includes some pills and electuaries, chiefly those suitable for venereal cases. This portion was called within the Hospital "The Surgeon's Book," and I believe that without the permission of the physicians, the surgeons could only order the formulæ contained in this portion.[1] Some of the preparations have the initials of Pott, Nourse, and Freke appended to them, showing that they were either suggested or used by them in the form in which we have them; and to some brief notes are added. Thus we find under Spir. Discutiens vel Mindereri :—

"℞. Sal Ammoniac. crud. q. s. ad perfectam saturationem, aceti vini albi acerrimi lb.ij.

"This is a most admirable discutient; it dispersed a tumour in a girl's knee, which from the fluctuation appeared to contain at least an ounce of a glairy fluid."

Again, under Bolus e Sarsaparillâ :—

"℞. Pulv. Sarsaparilla. ʒss, G. Guaiaci ℈ss, G. Arabici ℈j.; Bals. Copaib. q. s. f. bolus.

"This is frequently ordered by Mr. Potts (*sic*) to be taken every morning in a gleet remaining after a salivation."

At the end of the Surgeon's Book the following notes appear :—

"The following method cured a girl of contraction of the muscles of the calf of her left leg, under which she had laboured some months, and by means whereof her foot was drawn quite inwards, so that she could not put it to the ground:

"Applicetur epispast. suri sinistr.

"℞. Pulv. Ipecacoan ʒss bis septimana.

"℞. Pulv. Valerian. sylv. ʒss sextâ quâque horâ. Balneum calidum bis septimana.

"In scrophulous tumours of the glands the following method bids fairest to effect a cure:

"℞. Antimon. Crudi p.p.t., Spong. usti ana ℈j, Calomel p.p.t. gr.j. M.

"F. pulvis omni mane et h. s. sumend. superbibend. lb.ss aquæ marinæ.

"But to say the truth, the success depends chiefly on the sea-water, which succeeds as well when used singly."

The Pharmacopœia contains 9 boluses, 2 cataplasms, 5 decoctions, 2 electuaries, 1 emplastrum, 4 enemata, 3 fomentations, 3 gargles, 4 draughts, 4 linctuses and lohochs, 2 liniments, 1 lixivium, 11 mixtures, 5 pills, 2 potions, 5 powders, 3 ointments, and a few other preparations not coming under these heads.

The Surgeon's Book contains 2 waters, 1 balsam, 2 boluses,

[1] Even as late as 1754 the following minute appears: "That the Apothecary do not deliver or prepare any medicines but such as shall be ordered by the Physician of the Hospital, excepting that the Surgeons of the Hospital may order mercurial physic and purges for their patients."

2 bougies, 5 cataplasms, 4 cerates, 1 collyrium, 6 decoctions, 2 electuaries, 2 fomentations, 2 injections, 3 liniments, 3 lotions, 6 ointments, and a few other formulæ.

The preparations as a whole are remarkable for their simplicity, few of them containing more than three or four ingredients. The titles of a good many of the preparations of the London Pharmacopœia, being those, I presume, that were most commonly used in the practice of the Hospital, are intercalated between the preparations given in the Hospital Pharmacopœia.

The diets of the London hospitals are also given, but they do not correctly represent our own; St. Bartholomew's, owing to the munificence of Dr. Radcliffe, who left a special bequest of £500 for improving the diets of the patients, enjoyed a more liberal diet than the others. I have here transcribed them:—

FULL DIET.

Sunday and Thursday.

Breakfast . . . . A pint of water-gruel.
Dinner . . . . . Half a pound of boiled beef with greens.
Supper . . . . . A pint of broth.

Tuesday and Saturday.

Breakfast . . . . A pint of water-gruel.
Dinner . . . . . Half a pound of boiled mutton and greens.
Supper . . . . . A pint of broth.

Monday.

Breakfast . . . . A pint of milk-pottage.
Dinner . . . . . A pint of rice-milk.
Supper . . . . . Two ounces of cheese or butter.

Wednesday.

Breakfast . . . . A pint of milk-pottage.
Dinner . . . . . Half a pound of boiled pudding.
Supper . . . . . A pint of water-gruel.

Friday.

Breakfast . . . . A pint of milk-pottage.
Dinner . . . . . A pint of plumb-broth.
Supper . . . . . Two ounces of cheese.

The patients upon full diet shall have one loaf of bread per day.
Three pints of beer per day from Ladyday to Michaelmas.
One quart from Michaelmas to Ladyday.
N.B.—The loaf of bread weighs fourteen ounces.

LOW DIET.

Sunday.

Breakfast . . . . . A pint of water-gruel.
Dinner . . . . . Two ounces of roast veal, with a slice of bread-pudding.
Supper . . . . . A pint of broth.

Tuesday and Saturday.

Breakfast . . . . . A pint of water-gruel.
Dinner . . . . . Two ounces of boiled mutton with greens and a pint of broth.
Supper . . . . . A pint of broth.

Monday.

Breakfast . . . . . A pint of milk-pottage.
Dinner . . . . . A pint of rice-milk.
Supper . . . . . Two ounces of cheese or butter.

Wednesday.

Breakfast . . . . . A pint of milk-pottage.
Dinner . . . . . A slice of boiled pudding.
Supper . . . . . A pint of water-gruel.

Thursday.

Breakfast . . . . . A pint of water-gruel.
Dinner . . . . . Two ounces of roasted veal, and a pint of rice-milk.
Supper . . . . . A pint of broth.

Friday.

Breakfast . . . . . A pint of milk-pottage.
Dinner . . . . . A pint of plumb-broth.
Supper . . . . . Two ounces of cheese or butter.

The patients on low diet shall have one loaf of bread per day.
One quart of beer from Ladyday to Michaelmas.
One pint per day from Michaelmas to Ladyday.

MILK DIET.

Sunday, Tuesday, Thursday, and Saturday.

Breakfast . . . . . A pint of milk-pottage or water-gruel.
Dinner . . . . . A pint of plum-pottage and four ounces of bread-pudding.
Supper . . . . . A pint of milk-pottage or water-gruel.

MONDAY, WEDNESDAY, FRIDAY.

Breakfast	A pint of milk-pottage or water-gruel.
Dinner	A pint of rice-milk.
Supper	A pint of milk-pottage or water-gruel.

The patients upon milk diet shall have one loaf of bread per day.

Three pints of drink per day, one part whereof shall be of milk and two of water.

The patients upon fish diet shall have fish for dinner on Mondays, Wednesdays, and Fridays, if it can conveniently be had; if not, the low diet.

The patients upon dry diet shall have two ounces of butter or cheese every day for breakfast, and the same for supper every day in the week; and the low diet for dinner, but without broth or rice-milk on Tuesdays, Thursdays, and Saturdays. Bread and beer as those on low diet.

The patients upon raisin diet shall have a pound of raisins per day, as much bread as they can eat, a quart of Decoct. Guaiac. fort., and as much of the Decoct. Guaiac. tenue as they can drink.

The patients under salivation shall have one quart of milk per day, and half a pound of mutton to be boiled for broth.

It is worth noting that so late as 1767 potatoes do not seem to have been introduced into any of the diets. Greens were given on certain days of the week, but no other vegetables are mentioned.

It is clear from entries in the Journal about this period that those patients who had any friends were allowed to supplement their diet by provisions introduced into the Hospital, and I find the following notice relating to this, January 19, 1746:—

"Complaints having been made to the Committee that the box-carriers attending the Surgeons do keep shops for the sale of ale, beer, and tobacco and other things, and that the Sisters compel the patients to buy their necessaries of these box-carriers, it was ordered that none of the Sisters or nurses of the Hospital do direct or by any way oblige their patients to buy their necessaries at any particular shop."

And at a still later period complaint was made at a Court held April 4, 1754—

"Of the resort of idle, loose, and disorderly persons, beggars and others, crying and selling all manner of commodities, very improper for the patients, in and about the staircases and wards of the 2nd and 3rd pile of buildings, to the great discredit of the good government of the House."

It was ordered that hatches should be made to the doors, and that the porter in one and the beadle in the other should be constantly in attendance to prevent this abuse. It must be remembered that at this time, and for many years afterwards, the Hospital had a public thoroughfare right through it, and at

different times there are entries in the Journal showing how great a nuisance this was. Thus, April 8, 1731—

"Complaint was made by some of the inhabitants of the Parish that a woman has set up a stall or board, and exposes things to sale at the Church door of this Hospital, and thereby obstructs the passengers; It is ordered that that woman be removed, and no person whatever be permitted with wheelbarrows, boards, or other things to hinder the passages from the Hospital gate in Smithfield to the Longwalk, nor hang out any goods for show, nor sell barley-broth at the Hospital gate in Smithfield."

This order does not seem to have been effectual in putting down this nuisance, as it was repeated on November 9, 1732—

"The Governors taking notice that the passage or thoroughfare from Smithfield thr° this Hospitall to Christ's Hospitall is very much obstructed by persons who keep applestalls and use wheelbarrows, Mr. Piggott the Porter was directed to remove them from time to time according to the order of April 8th, 1731, which he is ordered to observe and put in execution."

In 1788 the London College published its sixth Pharmacopœia,[1] and the Hospital no doubt revised theirs soon after, but the exact date I have been unable to discover. The Library of the Royal College of Surgeons contains a copy of our Pharmacopœia dated 1793, and I have another identical, so far as their contents are concerned, dated 1799. These copies are very similar in size and arrangement to those we now publish. No table of the diets is given. The principal difference from our existing form is that the preparations of the London College are indicated in the text instead of being relegated to the end of the book. The 1793 Pharmacopœia shows considerable changes. The Hospital formulæ are more numerous than in the 1767 edition. The boluses number 13, poultices 8, injections 8, urethral injections 4, mixtures 16, pills 21, draughts 20. A few of the preparations are very similar in their composition to some of those still in use, but none are exactly the same; the two formulæ which approximate most closely to existing ones being those for our calomel

[1] The sixth edition, published in 1788, does not differ very much from the fifth. Sixty-three articles appearing in the materia medica of 1746 are omitted, including bezoars, scink's bellies, and vipers. Forty-three fresh simples are introduced; some of them had been officinal before, such as digitalis, ricinus, senega, taraxacum, tussilago, &c.; but not a few were new to the materia medica, of which the most important are aconite, cascarilla, colchicum, ichthyocolla, kino, quassia, and simarouba. The preparation of colchicum introduced was the oxymel. Some of the last remaining of the old names are disused. Hiera picra becomes Pulvis aloeticus; Pilulæ ecphracticæ, Pulvis aloeticus c. myrrhâ; Philonium Londini becomes Confectio opiata; Pulvis ipecacuanhæ Co. vulgo Pulvis Doveri is made officinal, and Confectio Paulina, Confectio Damocratis seu Mithridatis, and its still more complex companion Theriaca Andromachi disappear from the Pharmacopœia.

and colocynth and sulphate of iron pills. The Surgeon's Book disappears, as by that time the right of the surgeons to order what drugs they thought necessary for the treatment of their patients was recognised.

From the minutes of the Shop Committee it is clear that another edition of our Pharmacopœia was brought out in 1819 or 1820. I have been unable to obtain a copy; none are preserved in any of the London libraries, and as yet I have not been fortunate enough to find any in private hands. This edition of our Pharmacopœia was about four years subsequent to the second edition of the seventh London Pharmacopœia.

Twelve years or so elapsed, and then in 1832 another edition of our Pharmacopœia was published. The only noteworthy features in it, comparing it with the 1799 edition, are that the waters are reduced in number. The boluses disappear altogether. A number of liquors appear, among them preparations of iodine, morphia, hydriodate of potash and quinine, which, I imagine, appeared for the first time then in our Pharmacopœia. At the end of the book the diet scales are given, and in place of having the names of the preparations of the London College inserted in the text, a list of them with a posological table is placed at the end of the volume, and also a list of what were then termed pharmaceutical equivalents, showing the approximate chemical formulæ of what in those days were called chemical drugs.

In 1838 another edition of our Hospital Pharmacopœia was published; it contains many fewer preparations than the 1832 edition. A very considerable number closely resemble the preparations now in use. Haustus ammoniæ acetatis and its derivatives appear, as well as the Haustus menthæ sulphuricus, in its present form, and also with addition of sulphate of magnesia. Among the pills, Pilulæ aloes, saponis, elaterii Co., Hydrargyri c̄ cretâ Co., Hydr. subchloridi c̄ colocynthide, Hydr. subchl. c̄ scammonio appear in their present shape. The list of chemical equivalents is left out, but in all other respects the volume resembles that of 1832 and all its descendants down to the 1869 edition, which was the first one published in English. The changes made from time to time during the last fifty years would not, I think, interest my readers, especially as at the end of this paper I shall make a few remarks on the introduction of some of the drugs which have more recently been added to our Pharmacopœia.

We must now return to a consideration of the changes which occurred in the Apothecary's shop, and the alterations from time to time made in its management. In my last paper I extracted from the Hospital accounts some details relative to the expense

of fitting up the first Apothecary's shop within the walls in the year 1614. The shop was then situated at the "end of the great cloyster," and Humphrie Croxton was apothecary at a salary of £16 a year. This salary was soon found insufficient, and was increased from time to time, until in 1623 Richard Glover, who had been appointed four years previously at a yearly salary of £30, had it increased to £40. In 1651—

"It was thought fitt and ordered that Mr. Treasurer pay William Greene, of this house x^{li} for the present year for making scurvy grass, all in respect his pains is now much more than it hath been formerly."

When Dr. Francis Bernard was appointed in 1660, we learn that the post of apothecary was so much sought after that there were twenty-one applicants, "all able persons." Bernard did the Hospital good service during the Plague, staying manfully at his post, when not only the Governors, but even the physicians of the Hospital seem to have deserted the stricken city. Thus we find in the minutes of a Court

"Held at the Green Man, near Laieton in the county of Essex, Sept. 28th, 1665. Forasmuch as it was now understood that the two doctors were remiss to officiate or procure their business to be done as it ought to bee. It was therefore thought fitt that Dr. Bernard, the Apothecary, whose ability is so well approved, should prescribe at the present for the patients in the said Doctors' steads untill further orders thereon."

The same Court

"Thought it fitt, agreed and ordered that the two doctor's sallaryes, viz. Dr. Micklethwaite and Dr. Tearne, be suspended and not payde unto them untill further consideration."

Notice was also sent to

"Mr. Thomas Woodhall now attending his Maiesty's, that the Hospital is now visited [*i.e.* by the Plague], and to desire his address to his Majesty to forbear sending any sick or wounded hither during this contageous tyme."

For eighteen years Dr. Bernard served this office, and was then rewarded by being made assistant-physician to the Hospital on November 20, 1678, in the room of Dr. Dacres, and Mr. Charles ffeltham was appointed apothecary, which office he held until his death in 1693, when he was succeeded by Mr. John Blaxton or Blackstone.

In the same year the Committee of the Hospital ordered

"That all Gallenical medicines and compositions that were generally prescribed by the Physitions of the Hospitall, and as many chymicall medicines as conveniently may be, shall be made and prepared at the apothecaries' shop within the House.

"The rest of the Chymicall medicines that cannot be made in the Apothecarie's shopp within the Hospitall, to be had from the Apothecaries' Hall.[1]

"That all testaccous powders wanting for the use of the Hospitall be had from the Apothecaries' Hall."

It was also ordered at the same Committee that

"A Booke be kept in the Apothecarie's shopp in the Hospitall, wherein shall be entered all medicines that shall be made in the shopp, the time when made, and the quantity."

About this time certain items begin to appear in the accounts having reference to the Dispensing Department. They are entered under the head of "Disbursements for y^e^ Apothecarie's Shopp."

Thus in the accounts for the year 1619 we have

	£	s.	d.
Hearb woman's bill	10	4	6
Hearbs for the scurvy grass	13	7	0
Buckthorne buries, horse-radish, and Acton waters	14	16	4

This is the first entry for Acton waters,[1] which appears annually from this date onwards, until 1713, when Streatham waters

[1] An interesting paper might be written on the mineral waters of London and its neighbourhood during the eighteenth century. London was well supplied with various forms of mineral waters, both chalybeate and saline. The best known of these were Bagnigge Wells, Sadler's Wells, and Lambeth, in the immediate vicinity of London; Acton, Streatham, and Dulwich, at a little farther distance. It is seen from the above entry that the Hospital made use first of Acton waters. Lyson, speaking of Acton Wells in his "Environs of London," vol. ii. p. 1, 1796, says: "About half a mile from East Acton are three wells of mineral water springing out of a deep clay, which were in great repute for their medicinal virtues about the middle of the present century. The assembly-room was then a place of very fashionable resort, and the neighbouring hamlets of East Acton and Friar's Place were filled with persons of all ranks, who came to reside there during the summer season. The wells have long since lost their celebrity; fashion and novelty having given preference to springs of the same nature at a greater distance from the metropolis. The site of Acton Wells is the property of the Duke of Devonshire."

Of these Acton waters, Dr. Bevis, who wrote in 1760 a pamphlet on the waters of the Bagnigge Wells, says that "they rendered the parts about the rectum sore and brought on hæmorrhoids," as, he says, the aperient waters about London are apt to do, the saline waters of Bagnigge Wells being free from this disadvantage. Thomas Guidott, in his "Thermæ Britannicæ," 1690, mentions Acton waters, and states that, being evaporated, they yield a very bitter flavour to the taste.

Streatham waters, which the Hospital took to using in 1713, are also mentioned by Guidott; and Benjamin Allen, who wrote in 1699 "The Natural History of the Chalybeate and Purging Waters of England," says of them, "Of odour sweetish, of taste it was nauseous and saline; not so bitter as Barnett taken at the same

[1] This is the first mention I have come across of the Apothecaries' Company.

are joined with them. During the next thirty years mineral waters, or Streatham waters, are a constantly recurring item in the bills of the Apothecary's shop; but in 1743 the Hospital seems to have changed its supply, and Dulwich waters appear to have taken the place of Streatham, costing in that year £7, 17s. These waters seem to have been approved, as two years later the bill for them amounted to £19, 5s.

In 1699 wine appears for the first time among the bills, costing £43, 1s. 8d.; it is probable that this was due to some fresh regulation not noted in the Journal, that wine should be supplied from the Apothecary's shop, and also to the increased manufac-

time." The same author says of the Dulwich waters, which were afterwards used in our practice, "They bear not drinking with the same freedom as others, being more cold and heavy on the stomach."

Dr. Donald Monro, in his work on Mineral Waters (2 vols. 8vo, 1770), says of these waters (vol. i. p. 143), "Acton water is clear, without any smell, and has a little bitterish taste;" and (p. 135), "Streatham is a mild purging water, which yields by evaporation (according to Rutty's account) about 200 grains, or ʒiij. ϑj. to the gallon;" and of Dulwich he writes (p. 133), "This is a weak purging water; it is clear, obscurely brackish, and a little bitter in the throat."

From Lysons (vol. i. p. 491) I learn that the Streatham spring was discovered in 1660, and when he wrote, he says that "there is no accommodation for persons who come to drink it on the spot; yet the well is much resorted to by those who cannot afford a more expensive journey, and the water is sent in considerable quantities to some of the London Hospitals." At the beginning of the eighteenth century there seems, from the following advertisement, to have been a house of entertainment at the well:—*Post Boy*, May 28, 1717.—"The true Streatham water, fresh every morning, only at Child's Coffee-house, in St. Paul's Churchyard; Nando's Coffee-house, near Temple Bar; the Garter Coffee-house, behind the Royal Exchange; the Salmon; and at the Two Post Boys, in Stocks Market. It is judged to be the best for purging in England. *N.B.* All gentlemen and ladies may find good entertainment at the wells abovesaid by Thomas Lamb."

A pump-room still exists at the Streatham Well, and till within a few years, if not now, carts used to go round the suburbs in the neighbourhood with the water for sale.

In the *Philosophical Transactions*, vol. xli. No. 461, p. 835, is an account of the discovery of the Dulwich spring and a rough analysis of its water by John Martyn, Professor of Botany at Cambridge. He reports of it, "that being drunk fresh, in the quantity of five half-pint glasses, it purges quickly, not sinking but raising the spirits. It is found to be very diuretic." Lysons gives the following account of the discovery of the Dulwich waters:—"In the year 1739 a mineral water was discovered here in digging a well at the Green Man, then a place of much resort for parties of pleasure from London, now a private house, and lately the residence of the Lord Chancellor" ("Environs of London," vol. i. pp. 86–87, 1796).

Sydenham waters, which were much earlier discovered, being known in the year 1640, and the subject of a treatise by John Peter in 1681, were often improperly spoken of as Dulwich waters. Monro says of them (p. 138), "Sydenham is a mild purgative water."

I shall have to speak hereafter of the famed Islington Spa, but this is a convenient place to enumerate the mineral springs which, during the last and preceding centuries, were the resort sometimes of the fashion and sometimes of the

ture of Galenical medicines in which wine was used within the walls of the Hospital, in accordance with the regulation passed in 1693, alluded to above.

Many years subsequently, as I shall have to notice, the amount of wine used for this purpose was so large that the Hospital determined to make their own raisin-wine for this purpose.

In this same year the Oyle man first appears with £43, 4s. credited to him; four years later, 1703, spirits make their appearance in the accounts, and cost £17, 5s.; they were probably principally used in compounding medicines. Bees-wax and honey are also large items. Hog's-lard is specified for the first time in 1708, the cost amounting to £4, 16s., and it rapidly increased to more than double that sum.

The rapid increase in the expenses of the Dispensing Department is shown by the disbursements standing in the ledgers of the Hospital, and as an example I give the payments made in 1702, 1720, 1735, 1743, under the heading of "Paid for the Apothecarie's Shop:"—

1702.			
Wine	£18	14	6
Oyle	52	17	0
Acton waters	23	14	0
Bees-wax and honey	17	12	0
Litharge	6	2	0
For drugs	236	9	0
The grocer	139	15	0
Which with other payments make a total of	£733	15	0

1720.			
Druggist's	£198	2	0
Grocer's	127	12	0
Wine cooper	40	10	0
Leather seller	45	2	0
Chymical medicines	91	9	0
Mineral waters	16	0	0
Bees-wax and honey	26	15	0
Hog's-lard	9	6	0
Spirits	51	14	0
Oyle	66	8	0
The potter	10	10	0
Stationery	16	15	0
Paid for herbs	8	0	0
Disbursements of apothecary	233	11	0
Making a total of	£941	14	0

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invalids of London. I have arranged them according to the properties of their water:—

Saline.
Acton.
Bagnigge Wells.
Barnet.
Dulwich.
Epsom.
Kilbourn.
Lambeth.
Streatham.
Sydenham (sometimes spoken of as Dulwich and sometimes called Norwood).

Ferruginous.
Bagnigge Wells.
Bromley.
Hampstead.
Islington.
Kensington.
Shadwell.

Doubtful.
Northall.
Tilbury.

1735.

	£	s	d
Druggist's bill	345	11	5
Grocer's	185	15	0
Wine	69	18	6
Leather seller	43	15	0
Chymist	41	8	0
Spiritts	115	10	0
Bees-wax and honey	16	0	0
Oyle	28	17	6
Potter	11	3	0
Stationer	12	13	0
A lavigating stone	1	15	6
Hog's-lard	15	11	2
Dryed flowers	7	4	0
Herbs	26	0	0
For the use of the Bagnio	12	18	0
Making a total of	934	0	1

1743.

	£	s	d
Druggist's bill	399	11	0
Grocer's	222	7	0
Wine	42	8	0
Leather seller	42	8	0
Chymicall medicines	97	3	0
Spiritts	154	7	0
Honey, wax, and saffron	62	15	0
Oyle	41	11	0
Potter	10	6	0
Stationer	15	16	0
Hog's lard	10	9	0
Dryed flowers	54	5	0
Herbs	26	9	0
Butter	5	12	0
Saffron	3	12	0
Dulwich waters	19	15	0
Bottles	2	10	8
Do.	11	17	0
Pewter potts	8	11	0
Bees-wax	1	6	3
Wine	2	3	6
Making a total of	1235	2	5

Unfortunately there is no account preserved at the time when these entries first began of the prices of individual drugs; but at a little later date the minutes of the Committee of the Apothecary's shop are entered in the Journals, and we learn that in 1730 jesuit bark was 8s. a pound, cardimums, 4s.; rhubarb, 14s.; senna, 2s.; gum guaiaci, 5s. 6d.; scammony, 14s.; whilst socotrine aloes were 6s., and opium 8s. 6d. per pound. These prices remained much the same for a good many years; bark, however, became much cheaper, costing only 4s. 6d. per pound in 1758 and 1763.

In 1712 Mr. John Blackstone petitions the Governors that his son-in-law, Mr. William Curwen, who had served his apprenticeship under Mr. ffeltham, might be appointed apothecary in his place. This petition was favourably received, and Mr. Curwen was appointed on August 4.

Soon after this we find constant notice taken of the increasing expenses of the Apothecary's shop. This increased expenditure was partly owing to an increase in the number of in-patients as well as of out-patients; for, from a joint petition of the physicians and apothecary for an increase of pay in 1717, we learn that four new wards had been opened, and the number of out-patients doubled in the last six years. The Court orders Drs. Cade, Levett, and Mr. Curwen to take into consideration the expenses of the Apothecary's shop, and see how they could be reduced. They reported—

"July 11, 1717, that they were of opinion that the present method now used could not be altered, nor the quantities nor qualities of medicines now allowed be abated without prejudice to the poore patients harboured in the Hospitall."

A debate arose out of this report, and it was brought forward that the expenses of St. Thomas's Hospital were not so great in this particular, and a meeting between the Governors of St. Thomas's and St. Bartholomew's on this point proposed. This proposed meeting never took place, as it was negatived by a Court held on the 25th of same month.

In 1719 occurs an entry which gives an insight into the state of the wards. On May the 9th the House Committee

"Agreed with Mr. Stanker to clear Sisters' Ward from buggs, and as he succeeds in that ward he is to be further employed for the same purpose in the other wards which are pestered with buggs."

We can well understand how in the old wards, and with wooden tester-beds, these noxious insects would be harboured. How long Mr. Stanker was employed and how far he succeeded is not told us; but in 1769 the new wards seem also to have become pestered with bugs, as Mr. Robert Roberts, of Union Court, Holborn, offered to kill them at a cost of three shillings a bed and one shilling annually. The Governors agreed to permit him to try at that rate of payment in two wards, and he was so successful that the next year a contract was made with him to keep the wards clear of bugs at the rate of one shilling per bed annually.

About this time the improved diet scale, which has been given above, came into use, and arrangements were made for cold baths for the patients, £3, 3s. being paid yearly for the use of the cold bath in Newgate Street. Whether this cold bath was at the Bagnio or elsewhere, I do not know; but eight years later, in 1727, the sum of £24,15s. is paid for the use of the Bagnio for 495 patients, and an agreement was made with Mr. Westly, the keeper, that patients should pay at the rate of one shilling per head for admission on every working-day, and that two patients should be admitted free on Sundays, but should pay sixpence to his housekeeper. Three years later Mr. Westly is summoned before the court, as his servants had been exacting sixpence apiece from the patients who had used the bath. Mr. Westly acknowledged the truth of the charge, and paid £5 to the poor-box. From these entries we see how ready the Hospital was to afford every advantage to its patients; for a shilling a bath was a large sum in those days. The Bagnio was a Turkish bath. Strype says of it—

"The Bagnio is a neat contrived building after the Turkish mode for that purpose, seated in a large handsome yard, and at the upper end of Pincock Lane, which is indifferent well built and inhabited. This Bagnio is much resorted unto for sweating, being found very good for aches, &c., and approved by our physicians."[1]

How long we continued to send patients there I do not know. Pennant says of it "that it became a sort of hotel or lodging-house for a short space," as did the Hummums in Covent Garden. Ten years or so later, 1741, the Governors put the present bath in order, as on July 16th—

"They took into consideration the making use of the hot and cold bath, and came to the following resolutions: That an iron rail be fixed on each side of the cold bath and the pumps put in order, and means used to prevent the stench from the common sewer. That the cold bath be used for the poor of the house till further orders. That the hot bath be also made use of for the poor of this house and heated with cinders from the wards, which is represented as sufficient for that purpose. That an allowance of a penny apiece for each man, and do. to a woman for each woman, to take care of the patients both in the hot and cold baths, such man and woman to be appointed by the Physicians and Surgeons, or any two of them. This to continue till further orders."

Another example of the liberality of the Governors of the Hospital is the use made of the Islington waters. When our patients were first in the habit of going to drink the Islington waters, I can find no record; but in the year 1750 difficulties arose with the proprietor, Mr. Skelton Barrett, as to payment for the patients. The Court referred first to the physicians, to know what was their opinion of the value of the waters.[2] They certified—

"That Islington water is in their opinion a good steel water, and of excellent use in many cases that daily come before them in the Hospital; and that if it can be had at a moderate price, it will save the Charity no inconsiderable sum in medicine."

Mr. Barrett stated that—

"For eight successive years the numbers of the patients drinking the waters had exceeded 150 annually, and for the latter years near 200, who

[1] Stow's "Survey," edit. 1720, Bk. iii. p. 195. This Bagnio, sometimes called the Royal Bagnio, was built in 1679, and was the first Turkish bath introduced into London. A few years later another similar bath was built near the west end of Long Acre, on a piece of ground called Salisbury Stables; in 1686 it was improved and reopened as the King's Bagnio, and kept by one Leonard Cunditt. The Hummums of Covent Garden was considerably later.

[2] This refers to the famous Sadler's Wells, or New Tunbridge Spa, as it was called. When this spring was first discovered and made use of by the inhabitants of London is unknown, but before the Reformation the well was, according to T. G., Doctor of Physic, who published a pamphlet on the waters in 1684, very much famed. This T. G., Doctor of Physic, was Thomas Guidott, who in 1690

had been permitted to drink the waters as long as their respective cases lasted, usually six weeks.

"That the price paid by those using the waters was threepence per morning, paid on going in; but with regard to the Hospital, that price is not asked, and that in future he would be content to accept £30 per annum for the liberty of the patients sent from the Hospital to drink the waters, to be admitted at stated hours and under certain regulations.

"That to prevent disputes with regard to his claims for the eight years past, he was willing to accept £130 for the same, being not quite one-fifth part of what would be due to him if he was paid in proportion to what is paid by other persons."

From the same source I obtained the following lines in praise of the waters, written by a grateful person who had experienced much benefit from them:—

"This water, drunk with careful art, is found
To raise the weak, to make the leprous sound;
It gives relief in each obstructive case;
Corroding gravel by its force will pass;
Inveterate coughs, tough phlegms it will dispel,
And numbers save whose bodies dropsies swell."

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published his well-known work, "Thermæ Britannicæ," who, in a poetical enumeration of the baths of England, thus speaks of Islington:—

"Vos Ebesham,α Northall,β Acton, Tunbrigia, Stretham,
Astrop,γ Sene,δ Dulwich, cedite Bathoniæ;
Parnassum superas licet Islingtonia Thermis
Si collata Tricepsε bis tua laudis inops."

From his pamphlet, which is quoted by Strutt, "Sports and Pastimes of the People of England," 2nd edit. p. 256, we learn that "before the Reformation the well was accounted sacred and called Holywell. The priests belonging to the Priory of Clerkenwell using to attend there made the people believe that the virtues of the water proceeded from the efficacy of their prayers; but at the Reformation the well was stopped upon the supposition that the frequenting of it was altogether superstitious, and so by degrees it grew out of remembrance and was wholly lost until thus found out, when a gentleman named Sadler, who had lately built a new music-house there, and being surveyor of the highways, had employed men to dig gravel in his garden in the midst thereof, they found it stopped up and covered by an arch of stone." This was in the year 1683. After the decease of Sadler, Francis Forcer, a musician and composer of songs, became occupier of the wells and music-room; he was succeeded by his son, who first exhibited there the diversion of rope-dancing and tumbling. According to Strutt, Sadler's Wells during the last century was a sort of headquarters of rope-dancing. The gardens of Sadler's Wells attained the zenith of their popularity about the years 1730–35, as, according to an account of them in the *Gentleman's Magazine*, "during the year 1733 their Royal Highnesses Princesses Amelia and Charlotte frequented the gardens daily for the purpose of drinking the waters, when such was the concourse of the nobility and others, that the proprietor took above £30 in a morning."

α. Ebesham = Epsom.
β. Northall = Northaw near Barnet.
γ. Astrop in Northamptonshire.
δ. Sene = Send near Devizes, Wiltshire.
ε. Refers to the two springs at Bagnigge Wells as well.

"For three times ten years I travelled the globe,
Consulted whole tribes of the physical robe;
Drank the waters of Tunbridge, Bath, Harrogate, Dulwich,
Spa, Epsom (and all by the advice of the College),
But in vain—'till to Islington's waters I came,
To try if my cure could add to their fame.
In less than six weeks they produced a belief
This would be the place of my long-sought relief;
Before six weeks more had finished their course,
Full of spirits and strength I mounted my horse,
Gave praise to my God, and rode cheerfully home,
Overjoyed with the thoughts of sweet hours to come.
May Thou, great Jehovah, give equal success
To all who resort to this place for redress."

Islington Wells furnished a subject for many pamphlets, and a comedy by G. Colman, 1776.

The dispute with Mr. Skelton Barrett lasted some time, and was not settled until January 22, 1752, after Mr. Barrett had entered a suit at law against the Hospital. Ultimately he consented to take £50 in full payment of arrears; each patient to pay one penny a day and be subject to the following rules:—The patients to come to the wells before 7 A.M. The men to walk in the fields between the times of drinking the waters. The women to confine themselves to the appointed path in the garden. The hour was objected to as inconvenient, and I fancy that it was virtually almost prohibitive of our patients using the waters. I find no specific payments for them after this date.

In 1728, "Mr. Curwen, having for the three years last past been allowed to execute his duties through Mr. Wall, his deputy, being still unable through bodily infirmity to discharge the office of Apothecary, is dismissed."

Mr. Thomas Northey was appointed his successor on August 1st. Mr. Northey held office for nearly twenty years, and during his time great changes occurred in the working of the Dispensing Department. The yearly increase in the expenses of the shop was a constant source of anxiety to the Hospital. The year after his appointment the following resolution was passed:—

Nov. 29, 1729. — "The Treasurer and Governors, taking into their consideration the great increase of late years in the expense of the Apothecarie's shop within the Hospital, and of the Apothecarie's bills for medicines for the officers of this house, which have of late years been supplied generally from the Apothecarie's own private shop, not from the shop within the Hospital, are unanimously of opinion that for the future only medicines compounded within the Hospital be used."

They appointed a committee to look into the management and working of the Dispensing Department. This committee was a

very large one, and contained the names of many eminent men; among others, of Dr. R. Mead and Sir Hans Sloane.

Soon after Mr. Northey's appointment the question of rebuilding the Hospital was seriously entertained by the Governors, and the following appears in the preamble to the resolution passed by the Court:—

July 10, 1729.—"And the said Hospital, by being built at several times, is so irregular, that there is scarce any communication between the several parts of it, and the whole has hardly so much as the outward appearance of an Hospital, and by the erecting of buildings intermixed with those of the Hospital soon after the Fire of London, for the accommodation of the citizens who suffered in that great calamity, the free course of the air for the benefit of the poor hath been much obstructed."

Then follows the resolution that it should be rebuilt. At this Court the plans for the new buildings were approved. As the rebuilding of the Hospital proceeded, the old Apothecary's shop at the end of the great cloyster had to be pulled down, and a fresh one was consequently required. On November 11, 1742—

"It was resolved that it is the opinion of this Committee that the room lately used as a ward for the poor, and called Peter's Ward, is a proper place for an Apothecary's shop, a storeroom for drugs, a room for the meeting of the Physicians and Surgeons, and other necessary offices, and be made fitt for that purpose against the old one is pulled down."

From the year 1743 to 1748 the minutes contain numerous resolutions and orders appertaining to Mr. Northey and the shop. Notwithstanding the frequent inspections of the shop and its accounts by the committee, the expenses continued to be augmented; the numbers of out-patients being constantly referred to as an explanation. Mr. Northey appears to have had a large private practice outside the Hospital, and he is several times reprimanded for neglecting his duties within our walls. In January 1743 a special charge was prepared and given to him; this is the first mention of a charge for the apothecary that I find. The words of the charge are not preserved. By February in this year the changes in Peter's Ward were completed, and it was ready for occupation as the shop; at the same time it was decided to build a laboratory for the preparation of the medicines, but some years elapsed before this decision was acted on.

In 1745 it is ordered—

"That upon the delivery of the medicines to the inn-patients and out-patients under care of this Hospitall, directions be given in writing in what manner they be taken;" and a special order was made "that the Apothecary do not deliver any spirits of wine to the Sisters without a note signed by one of the Surgeons."

In 1746 it was resolved that the apothecary should reside within the Hospital, and a house was assigned to him in Tart's Court till the new laboratory and apothecary's premises were built.

As a means of further reducing the expenses of the Apothecary's shop, the Governors decided to make their own raisin-wine this year, and Martin Platt, the brewer, was ordered to make such wine as soon as possible.

The patience of the Governors with Mr. Northey was at last exhausted; his final misdeed appears to have been supplying "bark electuary ill compounded and not fitt to be administered to the patients of the Hospitall;" and Ishmael Parbery was elected apothecary on probation, August 4, 1747. His salary was £100 a year, a dwelling-house free of all rates and taxes, three chaldrons of coal, four dozen of candles, and £50 a year to provide servants for the laboratory. On July 14, 1748, he was duly appointed and received his charge, the Hospital allowing him a further sum of £30 a year for a journeyman, and the clauses requiring the apothecary to be an unmarried man were rescinded. Parbery did not hold the post long, as he died the following year, and was succeeded by Thomas Robinson, who was appointed September 7, 1749. During the eighteen years that Mr. Robinson was apothecary there are no entries of his being brought before the Court to be reprimanded; he appears to have been a most excellent servant to the Hospital, and to have given great satisfaction. The expenses of the shop still increased, but not unduly, and there are not nearly so many references made to the shop in the Journals during his lifetime. This partly arose from the greater conveniences at his command, as the final plans for the laboratory were approved on May 12, 1747, and it was certainly completed by 1753, as in that year it was decided that the laboratory should be rated for the poor-rate at £8, 8s., the same sum as was charged on the four houses which had stood on the ground thereof. The vault under the Apothecary's shop, not being required for the use of the Hospital, was let in 1755 as a beer-cellar.

In 1754 the diet scales were again taken into consideration by the Governors. The only changes worthy of notice made were the following:—

"That such patients who have fevers or other violent diseases, and cannot eat either the meat or milk diet, be allowed water-gruel or barley-water only."

"That it be referred to the Treasurer and Almoners, with the advice of the Physicians and Surgeons, to order a proper diet for dropsical patients, when a more solid diet is proper, as butter and cheese or rice-milk in a morning."

If our fever patients were really confined to the above diet, water-gruel or barley-water, it would be extremely interesting to find out what the results of such treatment were. I could find no minute which threw any light on the conclusion arrived at by the Treasurer and Almoners after consulting with the physicians and surgeons as to the expediency of butter and cheese in a morning for dropsical patients. In this year also appears an order directed to stop an abuse that had gradually grown up in the Hospital of the box-carriers demanding a fee of threepence or more from every patient who is ordered to be blooded. From this order it appears that the box-carriers were patients, as they are described as the "patients which do carry the surgeon's box."

On January 27, 1757, the President informed the Court that the gaoler of Newgate having applied to the Hospital for a surgeon to attend a prisoner in Newgate, a horse-stealer, whose leg had mortified, had been refused; the Court of Aldermen direct that a physician, surgeon, and apothecary be appointed to visit the sick poor in the gaols of this city if necessary in cases of danger and emergency. At the end of the year Mr. Robinson presented a petition, stating that he had as much as he could attend to within the Hospital. This petition was referred to the physicians and surgeons, and they reported—

January 5, 1758.—"That they apprehended that their visiting the sick prisoners in Newgate cannot be attended with any success or benefit to them in the present state of the gaol, as they have on their attendance there found such prisoners entirely destitute of cloaths, bedding, and all sorts of convenience necessary for sick prisoners.

"That if a surgeon and apothecary in ordinary were appointed to take care of such sick prisoners with proper accommodation, they should not be wanting in cases of emergency to give the best assistance they can."

This answer was adopted by the Court, and sent to the Lord Mayor and Court of Aldermen.

In 1761 Mr. Robinson's house in Tart's Court was enlarged, and beautified by having the "marble chimney-piece lately taken down at the Treasurer's house sett up in it."

At the Committee on July 22, 1767, notice was given of Mr. Thomas Robinson's death, and the physicians and surgeons recommended that his nephew, Mr. William Robinson, who had been "brought up to the business," and had been apprentice to his uncle for three years, should do the work until another apothecary be appointed. William Robinson was duly appointed the following week. He seems to have been an equally meritorious servant to the Hospital as his uncle, and he held office for the long period of thirty-four years, resigning his post in 1799 under

very distressing circumstances. In his letter of resignation he says—

"Owing to indisposition of body and mind, originally induced by some distressing family concerns, and under which I have for some time laboured, I have lately been incapable of fully discharging my duty as Apothecary to this Hospital.

"I have therefore been advised by my friends to beg of you to accept my resignation.

"Having been for 34 years Apothecary to this House, and having no property to afford me even a subsistence, I have only to hope that the consideration of these circumstances will incline you to entreat the indulgence of the General Court in my favour."

The General Court accepted Mr. Robinson's resignation, and in consequence of his embarrassed situation it recommended that he should be allowed three guineas per week as a remuneration for his long services. During the long period that Mr. Robinson held office, very few notices of the Apothecary's shop appear on the minutes. From time to time notices of changes made or proposed in the shop occur, such as that of January 16, 1769—

"When a new still tub, cistern, and grinding mill is ordered to be set up in the elaboratory under the direction of the Surveyor."

In 1777 it is ordered that an electrical machine be purchased for the use of the patients of this Hospital. The next notice of an electrical machine is not met with until 1818, when, as I shall hereafter show, an Electrical Department was inaugurated.

In 1781 the Governors proposed to rebuild the house in the occupation of the apothecary, together with that of the matron, and two houses at each corner of Tart's Court, and at the same time to widen the entrance to the Hospital at the Hartshorne[1] gate.

In 1797 the General Court recommended that an assistant-apothecary, at a salary of £100 per annum, should be appointed; at the same Court an extra gratuity was voted to Mr. Robinson (£60), and the thanks of the Hospital for his long and valuable services, extending over thirty years, voted to him. In the following year there seems to have been an idea of moving the site of the shop, but it was eventually decided to wait—

[1] Tart's Court was situated in Smithfield, close to what is now the end of the Library. The gateway here alluded to as the Hartshorne gate was what most of us remember as the Giltspur Street gate; this entrance was made on pulling down the old Hartshorne Inn. The arched gateway pulled down when the new school buildings were built was commenced in 1771; but the entrance was made some years previously on the pulling down of the old inn, 1751; the materials of the old inn being partly used in making covered sheds for the carriages of the Governors and others attending the business of the Hospital, and partly in rebuilding houses between the Cutting Ward and Windmill Court.

"Until the changes and alterations connected with the work at Christ's Hospital were begun, to see what could be done."

On August 23, 1799, Mr. William Nicholson, who had been assistant-apothecary, was elected apothecary, being opposed by Mr. Thomas Wheeler, who ran him hard; Mr. Nicholson obtaining a majority of sixteen votes only. A new charge was made for Mr. Nicholson, and the assistant-apothecary was discontinued. The work in the Dispensing Department continued to increase, and in 1804 Mr. Nicholson petitioned for and obtained the appointment of an assistant—Mr. Crump being chosen. He did not enjoy his lessened labours for long, dying in the year 1806, when Mr. Thomas Wheeler was successful in the contest for the vacancy; a piece of plate or twenty guineas being voted at the same time to Mr. Crump for the satisfactory way in which he had discharged the duties of apothecary between Mr. Nicholson's death and Mr. Wheeler's appointment. Very shortly after Mr. Wheeler's appointment a select committee inquired into the duties and emoluments of the apothecary. This committee unanimously resolved—

"That in lieu of all allowances, perquisites, &c., formerly allowed, an addition of £150 be made to his salary; and that the whole salary be £350, and a house rent and taxes free."

In 1813 Mr. Wheeler's salary was further increased to £400. Very shortly after this, the dispensing seems not to have been satisfactory to the physicians and surgeons, and on July 14, 1814—

"The charge of the Physicians against the Apothecary's department having been answered by Mr. Wheeler as well as he could, and the Physicians having made their remarks on his answer, Mr. Wheeler was called and admonished by the President as to his future conduct in the presence of the Treasurers and Almoners."

During the years 1817 and 1818 several plans for the rebuilding the Apothecary's shop were under the consideration of the Governors. There are still preserved in the Apothecary's shop a book containing the MS. minutes of the Shop Committee between the years 1814–43. In some years the minutes are full, in others very scanty; the entries in the Journals of the proceedings of the Shop Committee during these years are very meagre. From the MSS. minutes of this Committee most of the following information was obtained.

The expenses of the shop again became a constant source of anxiety to the Governors, and many devices were made use of to prevent fraud and diminish the cost of the shop. Thus in 1814—

"It is ordered that 1 lb. of quassia for every gallon of spirits used in the Wards be put into the cask."

Common barley is to be used for French barley, &c.; whilst in

the year 1823 the Treasurer wrote a letter to the Committee, in which, after mentioning the great general increase in the expenses of the shop, he goes on to say—

"The items I would most particularly refer to are calicoes for rollers, &c., and leeches. In the former case the consumption for 1822 has exceeded that of the former years by nearly 1000 yards, the quantity used being 3508 yards. In the article of leeches the evil is of still greater magnitude. The year previous to the Treasurer's appointment, the annual consumption of leeches appears to have been 22,000; for the year 1821, about the middle of which he entered upon his office, the numbers consumed were 24,700, and the increase has been so enormously great of late, and has amounted for the last three months only to 13,000, making an annual consumption of 52,000, or 1000 a week, which is greatly more than double the number consumed in 1819; and it does not appear that this increase is in any degree to be attributed to a change in the practice of bleeding, for the cupper's bill for the last quarter has also very considerably increased in amount."

The apothecary (Mr. C. W. Wheeler) and the Shop Committee examined into the increased expenditure, and came to the conclusion that it was mainly due to the increase in the number of patients. They give the figures for the years 1820–1823, which are worth transcribing, as showing the numbers then dealt with by the staff of the Hospital:—

1820.		1822.	
In-patients . . .	2,914	In-patients . . .	3,744
Out-patients . . .	3,005	Out-patients . . .	2,666
Casualties . . .	2,625	Casualties . . .	3,084
	8,544		9,494
Expenses of shop, £2537, 4s. 1d.		Expenses of shop, £3009, 17s. 3d.	
1821.		1823.	
In-patients . . .	4,057	In-patients . . .	4,377
Out-patients . . .	2,973	Out-patients . . .	2,965
Casualties . . .	2,729	Casualties . . .	2,657
	9,759		9,999
Expenses of shop, £2441, 12s. 2d.		Expenses of shop, £3221, 8s. 6d.	

From other entries I am able to give the sum paid for leeches and for cupping, which was at that time performed by a special cupper, Mr. Atkinson:—

1820.	Leeches,	£145	9	7	Cupper's fees,	£45	0 0
1821.	„	194	5	6½	„	22	8 0
1823.	„	187	14	6½	„	46	18 0

Mr. Atkinson's fees for cupping must have either very much increased, or else the Treasurer and Almoners acted with unwonted liberality to him, for on February 11, 1840, the following minute occurs in the Journal:—

"The Treasurer and Almoners report to the Court that they are of opinion that the following mode will effect the object referred to them in

respect to cupping. In order that Mr. Atkinson, sen. may attend the future operations of cupping, it be recommended to the House and General Court to appoint him the Consulting Cupper at a salary of £50 per annum.

"The Surgery man when appointed to cup the out-patients and Casualty patients.

"The Assistant Apothecary to cup the in-patients.

"The Consulting Cupper to attend when required and cup such patients as may in the opinion of the Physicians and Surgeons of the Hospital be considered necessary."

During the latter part of the term that Mr. Wheeler held the office of apothecary, our Pharmacopœia, as I have already stated (p. 12) was revised. The revised edition was, I believe, published in 1819 or 1820.

From an entry in the preceding year we find that the attention of the Governors had again been directed to the unlawful habit of students prescribing for patients, and strict injunctions are given to the physicians and surgeons to find means to punish their so misbehaving.

The electrical machine—whether the original one purchased in 1777 or not, I know not—being out of order, was placed under the care of the apothecary, who was directed to employ Mr. Blunt of Cornhill when it needed repair. Whether Mr. Blunt declined or was unable to repair the machine does not appear, but in the following year Mr. Latchford's report is entered in the minutes:—

"That the electrical machine at present in use was quite unfit to be repaired. It was proposed by him to make a new machine upon the modern principle, with a plate two feet in diameter, and all the apparatus and case complete to the satisfaction of the medical officers, and afterwards to keep the whole in good and constant repair for a sum not exceeding £17, 18s., and that the machine be afterwards placed under the care of Mr. Latchford, but not to be taken out of the Hospital; and that Mr. Latchford will attend and electrify all the patients denoted by the Medical Officers to undergo the operation upon the following terms: if the operations within the Hospital do not exceed 30, at 2s. each, and if above that number, 1s. each. Resolved that the above conditions are approved of, and that the same be carried into effect without delay."

How long Mr. Latchford performed those duties, and whether he had a successor, I have been unable to find out. In 1838 he petitions for the second time that he should be paid by salary instead of the above terms. No answer to this petition occurs on the minutes, and no further mention of Mr. Latchford is found. In November 1843 Mrs. Woodcock's bequest of £200 consols to the Electrical Institution in Bunhill Row was made over by the executor of her will to the Hospital, as the institution to which she had bequeathed this sum had been dissolved during her lifetime. We see here the dawn of our present admirably arranged

Electrical Department, which, however, took upwards of sixty years to blossom into its present perfection.

In 1821 Mr. Thomas Wheeler resigned, and was succeeded by his second son, Mr. C. W. Wheeler. Mr. Thomas Wheeler is the most noticeable of all the apothecaries. A life-like sketch is given of him in the "Memorials of John Flint South,"[1] and some good anecdotes of his eccentricities are told in the "Memoirs of the Botanic Garden at Chelsea."[2] He was not only an excellent apothecary, but a first-rate botanist, and for forty-two years demonstrator of botany to the Apothecaries' Society, who so greatly valued his services that his portrait is hung in the great parlour of the Apothecaries' Hall.

One anecdote of him and the late Sir W. Lawrence is worth repeating:—

"He was one evening sitting in a room at the back of the 'Shop,' as the Surgery at St. Bartholomew's was called, with a number of students who were bantering him and one another, and he was descanting on the folly of superfluities in dress, &c., &c. Young Lawrence said, with his usual assumed gravity, 'Well but, Mr. Wheeler, how can you support such a doctrine while you wear such a superfluity as this!' lifting up the small *queue* or pigtail which Wheeler wore. Thus taken aback, the old man confessed that it was superfluous. 'Yes, my dear sir, you are right; we are too prone to preach one thing and to practise another. I never thought of it; cut it off, sir, pray cut it off;' and Lawrence forthwith performed the amputation requested."

Mr. C. W. Wheeler was an excellent officer to the Hospital; he made great improvements in the shop, and recommended successfully the extension of the steam-power for grinding and other purposes. In 1826 he was allowed £70 per annum to provide an efficient assistant, "to be always present as dispenser." After serving the Hospital fourteen years he resigned, and was succeeded by Mr. Philip J. Hurlock, who was appointed on November 10, 1835.

Upon Mr. Wheeler's resignation a special committee was appointed "to inquire into the practice of the Apothecary's Department." This committee seems to have taken much trouble in investigating the whole working of the shop and the duties of the apothecary; their report was brought before a special General Court held March 25, 1836, and at the same time letters were read from the physicians, Drs. Hue, Latham, Roupell, and from the surgeons, Vincent, Earle, Lloyd, which had been written to the sub-committee in answer to certain questions laid before the senior staff. The report is a long one, but as it may be said to have established the Apothecary's Department on its present footing, I give an abridgment of it.

[1] Collected by Charles Lett Feltoe. London, 1884.
[2] By Henry Field, Esq., edited by Dr. R. H. Semple. London, 1878.

1. The committee recommends that the medicines be compounded daily, and that no dresser or person other than the physicians, surgeons, and house-surgeon be allowed to prescribe.

2. That phials and gallipots be provided for use in the wards marked with St. Bartholomew's Hospital.

3. That pill-making machines be provided of 3 and 5 grains each.

4. That the drugs, &c., be furnished by contract, after open competition.

5. That the shop be open from 9 A.M. to 8 P.M.

6. That all stores be kept by the apothecary under lock and key, and that all drugs supplied for preparation in the laboratory be weighed out under his supervision.

7. Contains nothing of general interest.

8. That the physicians and surgeons should meet and visit the laboratory in a body once at least every month.

9. Like 7, contains nothing of general interest.

10. That boards similar to those used in the surgeons' wards be provided for the physicians' wards, in order that the books now used be discontinued.

11. That lint, trusses, and every other description of article used for the relief of the patients be under the care of the apothecary.

The staff of the shop at the time of the report consisted of the apothecary, three dispensers, and two labourers; the dispensers were unqualified, and the report recommends that in future two of the dispensers should be qualified, and one act as head of the other two.

From the letters of the staff it is clear that up to this time it formed no part of the duties of the apothecary, as defined in his charge, to see the in-patients in cases of emergency, or to attend to any casualty cases, such as poisonings and the like, and they all recommend a resident medical officer, who should see the patients in the wards in cases of emergency, and be on the spot ready to attend at once to poisoning cases.

Mr. Hurlock held office until his death in 1847; and on March 16, Mr. F. Wood, obtaining 15 more votes than his opponent, Mr. Rivington Wheeler, was appointed. On assuming office Mr. Wood had a new charge delivered to him; by its terms the apothecary also became the resident medical officer.

Condition of the Hospital during the Eighteenth Century.

The eighteenth century witnessed such great changes in our Hospital, that before proceeding to the few remarks I shall have to make on our pharmacy during the last fifty years, I should

like to refer to some of the many improvements made in both the buildings and management of our Hospital during the last century.

The end of the seventeenth and commencement of the eighteenth centuries are remarkable for the development in this country of a strong philanthropic movement, which is, we hope, not yet extinct. Thus Chelsea, Greenwich, and Guy's Hospitals were founded about this period; and though the two first owed their existence to royal liberality, it was doubtless owing to public opinion that the royal bounty took this particular form. Guy, who had been a liberal benefactor to St. Thomas's Hospital, commenced work on his own in 1721; and a few years later the citizens of London and other charitable persons responded most generously to the appeals of our Governors for money to rebuild our ancient wards. I might instance many other charities which were founded about this time, but it is perhaps sufficient to remind my readers that in London alone the following hospitals were founded in the first half of the eighteenth century: Westminster, 1719; Guy's, 1721; St. George's, 1733; London, 1740; Middlesex, 1745; Lock, 1746; Small-Pox, 1746; Jews, 1747; British Lying-in, 1749; City of London Lying-in, 1750; whilst St. Luke's, the Foundling, and Queen Charlotte's were also founded within a few years.

The number of charities started now-a-days is legion, but I fancy we are apt to forget that our ancestors were not unmindful of the sufferings of the poor and needy, and the above-mentioned institutions, together with many others, remain as enduring witnesses of their charity.

At the beginning of the eighteenth century the buildings of the Hospital remained in much the same state as at the re-foundation of the house, and were very widely different from our idea of an hospital. The wards were scattered, and the buildings mixed up with private houses; some of the wards opened directly on to public thoroughfares, which made it hard for the officers of the Hospital to keep order, and must have added greatly to the difficulty of maintaining proper supervision over the patients. This very clearly appears from the preamble to the resolution passed when the Governors decided on rebuilding the Hospital in 1729.[1] And an entry some ten years before gives us an insight into the disadvantages of having private individuals living within the precincts of the Hospital; Mr. Francis, a tenant of the Hospital, being arrested for assaulting the porter. Mr. Francis, it appears, was in the habit of keeping late hours, and one summer night, or rather morning, returning home between

[1] *Vide* p. 22.

2 and 3 A.M., was kept waiting longer than he liked by Walter Powell, the porter, and beat him over the head. Mr. Francis apologised and paid four guineas to the Hospital and the law expenses. At another time, one

"Charles Rayner, an antient inhabitant and tenant to the Hospital, brought a charge against Wm. Clutterbuck, the porter, of keeping a disorderly house frequented by lewd and riotous persons."

This charge he was not, however, able to substantiate. Allusion also has been made (p. 10) to the orders for preventing persons selling goods on the staircases to the patients, which shows how difficult it was to keep order; the words of the preamble have been already quoted (p. 22).

The foundation-stone of the first pile of the present buildings was laid on July 9, 1730. More than thirty years were occupied in building the four main blocks, the wards in the fourth pile being ready for occupation in 1769.

The first mention of fire insurance that I find is in 1718. The custom of insuring against fire is generally said to have been practised since the Great Fire, and I believe that the Hand-in-Hand Fire Office dates from 1696; the Hospital does not seem to have quickly availed itself of this provision against loss. We seem to have been very fortunate with regard to fire. The only mention that I find in the long series of years that I have looked through of damage to the Hospital by fire is in 1810, when some premises situated in the Cloisters having been destroyed by fire, it was determined, on the recommendation of the medical officers, not to rebuild them, but to take down the remaining buildings, and sell the materials by auction.

The close of the seventeenth century saw the staff reduced in numbers, as from that date the lithotomists were chosen from the surgeons of the Hospital; and thirty years later it was decided that all the surgeons and assistant-surgeons might cut for the stone, and special lithotomists were no longer appointed.

From an application made to the Court held April 27, 1717, we get an insight into the way in which anatomists were supplied with subjects in those times:—

"The Widow of Wm. Childers, who lately dyed a patient in this Hospitall, made complaint that her husband's corps after its buryal in the burying-place in Moorfields, was taken up by the grave-digger and sold to some Surgeons, which corps was stopped at an Inn in a hamper to be sent to Oxford. She therefore prayed that the House, in respect to her poverty, would give order for the prosecution of the said grave-digger and Surgeons and beare the charge thereof."

This the Hospital undertook to do.

The first commencement of our Museum appears to have arisen

in 1726, when a room under the cutting ward was set apart as a repository for anatomical preparations; the key was to be intrusted to Mr. Freke, or, on his declining it, to the youngest assistant-surgeon. Although this is the first mention of anatomical preparations, certain specimens had been preserved; for at this time, and for many years previously, the calculi removed by the lithotomists had been kept in the Compting House. Freke had at that time only lately been appointed assistant-surgeon. Another room under the cutting ward was at the same time set apart to receive the dead. The following year Mr. Freke was chosen by the Governors to take charge of the ophthalmic patients, as appears from the following resolution :—

"Through a tender regard for the deplorable state of blind people, the Governors think it proper to appoint Mr. John Freke, one of the Assistant-Surgeons of this House, to couch and take care of the diseases of the eyes of such poor persons as shall be thought by him fitt for the operation, and for no other reward than the six shillings and eightpence for each person so couched, as is paid on other operations."

Fourteen years later we find Freke senior surgeon, and applying to the Governors for permission to bury his wife in the church. This permission he obtained, being—

"Allowed to bury her in the Poors Chapple, he making good all damage and paying only single fees."

Fourteen years later still, in 1755, Freke sent in his resignation as surgeon, and at the same time requested the Governors to allow him, when he died, to be buried by the side of his wife. This request the Committee did not at once accede to, and I have been able to find no other entry on the subject; yet to judge from the inscription on the tablet to his wife's memory, Freke must have gained his desire, and was buried the following year near his wife. From his letter of resignation it appears that he was a martyr to and crippled by gout. Freke was not only an accomplished surgeon, but was also fond of art, and the associate of both artists and musicians. The following story is told in a Life of Hogarth, which shows that Freke set up for a critic in both arts. Hogarth was told, when dining with Cheselden, that Freke a few nights before, at Dick's Coffee-House, had said that Greene[1] was as good a composer as Handel.

"'That fellow Freke,' said Hogarth, 'is always shooting his bolt absurdly one way or another! Handel is a giant in music; Greene only a light Florimel kind of composer.' 'Ay,' said the informant, 'but at the same time Mr. Freke declared you were as good a portrait painter as Vandyck.' 'There he was in the right,' added Hogarth; 'and so I am, give me my time, and let me choose my subject.'"

[1] Dr. Maurice Greene, organist of St. Paul's.

Hogarth himself was interested in the Hospital, and in 1737 received the thanks of the Court of Governors—

"For his generous and free gift of the painting of the great staircase, performed by his skilful hand in characters taken from sacred history, which illustrate the charity extended to the poor sick and lame of this Hospital."

The paintings, that we all know so well, are, I believe, the largest canvases that Hogarth ever painted, and were executed when Hogarth was in the prime of life, soon after he had attracted the general attention of society by the success of the "Harlot's Progress." Although I believe that our pictures are the largest extant canvases of Hogarth's, he had a few years before painted wall-decorations for Mr. Tyers, who then managed the Spring Gardens at Vauxhall.[1] In 1769, five years after Hogarth's death, Mr. Boydell of Cheapside was allowed to make a drawing and print of the paintings on the staircase.

In 1727 the Hospital expended £2500 in rebuilding the Kingsland outhouse, and in repairing and enlarging the surgeon's house, and building a coach-house and stable for him.

A fresh set of resolutions for the conduct of the staff was drawn up in 1729:—

"The physicians, surgeons, assistant-surgeons and apothecary, do in a body once a week on Saturday in every weeke from Lady day to Mich^{ms} between seven and eleven o'clock in the morning, and from Mich^{ms} to Lady, between 8 and 11 in the morning, go through and visit all the patients within this Hospitall, and inquire into and consult together upon their several maladies, and the most proper means to be used for their recovery, and as there shall be occasion."

About this time also the Governors improved the attendance on the poor in the outhouses, and allowed fourpence a day "for a person to watch and attend the poor patients at each of the outhouses every night."

The fees paid by patients and the burial-fees were also taken into consideration, and the following scale of charges was drawn up, November 18, 1731, which remained in force for many years:—

	s.	d.		s.	d.
Coffin and shroud . .	6	6	Black cloth . . .	1	0
Ground	3	6	Notice of death . . .	1	0
Minister	2	6	Registering	1	0
Bearers	4	0			

[1] According to Timbs' "Curiosities of London," 1876, p. 814, these decorations were painted on canvas and nailed on to the boards. They were taken down in 1841, and sold for the following sums:—Drunken Man, £4, 4s.; The Happy Family, £3, 15s.; A Woman Pulling out an Old Man's Grey Hairs, £3, 3s.; Johnson and Nell in "The Devil to Pay," £4, 4s.; Children at Play, £4, 11s. 6d.

"Which appearing to be the expense of buryall at that place (Moorfields) in ancient time, is now approved and confirmed. In case a patient dyeth in the Hospitall, and their friends take them away to bury them themselves, the following fees are allowed and no more :—

	s.	*d.*
The Beadle for giving notice of death to the patient's friends .	1	0
The Porter for a certificate to the Parish where the patient is buried	1	0
To the Bearers for carrying the corpse to the Hospital gate .	2	0
The Matron for the use of a black cloth	1	0
The Steward for certifying the patient's death . . .	1	0
	6	0

Fees to be taken on the admission of patients—

The Sisters of the Cutting Ward may have	2	6
The helper there may take	1	0
The other Sisters may take	1	0
The Beadle for carrying a patient to the ward	0	6
The helper	0	6

Nineteen shillings and sixpence, the amount of the burial-fees, had to be deposited by each patient on admission.

In 1732 appears the first complaint of delay in the admission of a patient that I can find; and a special committee was appointed to investigate the case. In their report they recommend the following order to be made :—

"That for the future the Steward, or in his absence the Porter or Senior Beadle attending, do immediately, upon the first application, admit into the hospitall all the poor who shall have the misfortune to receive fractures, bruises, scalds, or any other sudden accident whereby they become helpless, and when taken in to procure the best security they can to answer the charge of burial."

On November 20, 1734, at a General Court it was resolved, *nemini contradicente,* that any of the surgeons or assistant-surgeons of the Hospital have leave to read anatomical lectures in the dissecting-room belonging to this house. At a subsequent General Court, held July 30, 1735, this order was discharged. The erection of the new buildings interfering with the old burial-ground for the parishioners, and for patients dying within the Hospital, the following resolutions were passed on June 21, 1744 :—

"Whereas part of the New Buildings of this Hospital is erected on the Churchyard belonging to the parish of Little St. Bartholomews, and the Parish Church itself is full of dead bodies, and there being urgent necessity for a burying-place for the parishioners. It is ordered that the piece of ground lying behind and between the Treasurer's House and the old Wards over the Wash-house be converted into a burying-place for the use of the Parish, and that an iron gate with a parapett wall and iron-work be made at the east end of the area in the front of the first wing or pile of buildings in the same manner as at the west end thereof."

And on July 12 the Treasurer communicated to the Governors that the portion of freehold land set apart in Goswell Street, St. Luke's, as a burial-ground *for patients* dying in the Hospital had been consecrated. At a later date, 1773, occurs an order:—

"That an umbrella be got for the use of the Clergyman, and be deposited at some safe place adjacent to the Burial Ground in Goswell Street."

This burial-ground was made use of until 1849, when it was finally closed in accordance with a resolution of the Court, passed July 25, "that it is desirable that the interment of bodies should for the present be discontinued, until such time as the Treasurer and Almoner think fit." I am informed by Mr. Cross that this piece of ground is now, and has for many years been, occupied as a sort of timber-yard for the stowage of builders' requisites. There is, I believe, a good hope that it may shortly be put to a more appropriate use as a recreation-ground for a block of labourers' buildings which are being erected hard by.

In 1747 a special committee was appointed to inquire into the duties of the several officers, sisters, nurses, &c., &c. This committee recommended that patients should be admitted during Christmas, Easter, Whitsun and Bartholomew-tide weeks, which up to this time had been kept as holidays; the appointment of two assistant-physicians to help the physicians in seeing out-patients; the surgeons to order and dress their patients at or before nine in winter and eight in summer; not to be absent from London for more than three days without leave; the assistant-surgeons to be officers of the house; the rule with regard to the weekly visit of the staff to continue in force.

The fees for the sisters remained unaltered, but the sisters of the fluxing wards, which were new, might take one shilling from each patient, and the nurse sixpence, and for every patient salivated the sister may take 6s. 6d., for which they provide flannels and other necessaries From the report of this committee, I think the sisters out of these fees had to provide crockery for the use of the wards. The same committee dismissed the steward, as he was found not to have returned the full amount of caution-money[1] to the patients when leaving, but to have kept back one shilling from each. The Court, however, did not act on this recommendation of the committee, but, after reproval, continued the steward in his post, refusing him his usual gratuity. Neither did the Court act on the recommendation of appointing assistant-physicians. Two years later, however, they determined on appointing a third physician. In this year the Hospital received a gift of £1000 from the fund which had been subscribed "for

[1] This means the 19s. 6d. provided for burial-fees in case of death.

the relief and encouragement of the soldiers concerned in repressing the late rebellion."

In 1750 the physicians and surgeons made application to the governing body that

"Liberty be granted them to open the dead bodies of such of their patients whose cases were extraordinary, in order thereby to discover the real cause of their death; and the committee being of opinion that the practice might conduce greatly to the benefit of the public in general, also to the poor patients hereafter to be admitted; it is resolved and ordered that liberty be granted them accordingly, and that the following rules be observed on such occasions."

The rules are virtually those still in use, and it is a satisfaction to find that the governing body of that day took so intelligent a view of this request of the staff, and at once acceded to it, instead of making any narrow-minded and ignorant objections. They little knew how much benefit they really were conferring, not only on future poor patients of the Hospital, but on the whole human race. The study of morbid anatomy since that date has done more to relieve suffering and save life than the most sanguine of our staff could at that time have ventured to hope.

In the year 1752, the Bishop of Worcester, preaching before the Governors of the Small-Pox Hospital, then recently opened, stated that the poor were not only not admitted, but were forcibly expelled from other hospitals when affected with the distemper. This statement seems to have given grave offence to our Governors. After some correspondence with the Bishop, he agreed to put an advertisement frequently in the public papers, stating that this was not the case at St. Bartholomew's. Small-pox seems to have been rife that year in London, and in June the Treasurer and Almoners determined to give up two wards for small-pox patients. This arrangement could be the easier made as the third pile of buildings was now finished, for on July 10—

"It was resolved and ordered that the new Wards of the third pile of buildings be used for the reception of women patients; and that four of the said Wards do bear the names of Marshall, Watt, Colston, and Aldred, in memory of Sir Henry Marshall, Kt., President; that the eight other Wards do bear the names of Mary, Elizabeth, Martha, Magdalen, Faith, Hope, Charity, and Patience."

The following year a subscription list was started for raising funds for the fourth pile of buildings.

In 1754 the Governors felt themselves obliged to pass new regulations regarding students. The new regulation draws attention to the old one, passed 1662, whereby—

"The Physicians are required personally to prescribe for the patients, and that no young gentleman or Doctor shall officiate for them without the leave of the General Court.

"That the Apothecary do not deliver or prepare any medicines but such as shall be prescribed by the Physicians of this Hospital, excepting that the Surgeons of the Hospital may order mercurial physic and purges for their patients."

A special committee was appointed in 1755 to consider the state of the outhouses; their report was not agreed to by the Court, and the matter of the outhouses, together with the reception of foul patients, remained under the notice of the Governors, and was the subject of much attention for five years, as it was not until November 6, 1760, that the following resolutions were adopted by the General Court:—

"Resolved that it doth appear to this Committee that the two outhouses were instituted for the admission of foul patients, and by the rules and orders of the Hospital no such patients ought to be admitted; that, nevertheless, great numbers of foul patients of late years have been admitted, and are now under care in the Hospital under pretence of other distempers, and are and have been salivated in the Wards contrary to the rules, and are provided with a dyet at the charge of this Hospital, whilst the poor patients admitted to the Locks have still to pay four pence per diem.

"That the outhouses be dissolved and the foul patients be admitted to Job and Lazarus, Patience and Luke. The patients to pay fourpence per day, unless destitute; to remain under the care of the Guides, the men under Mr. Townsend[1] and the women under Mr. Robert Young."[2]

It was subsequently decided that the diets of the patients in the foul wards should be the ordinary meat diet of the Hospital, except during salivation; also, that Mary Samuel, sister of the Lock, who had been nurse and sister 14½ years, should have the first vacancy at the Hospital, and be allowed seven shillings a week until such vacancy occurred; and that Barbara Upton, sister of Kingsland, being sixty-seven years of age, should receive a pension of £10 per annum.

In the following year Mr. Nourse died, and Mr. Townsend being called on to take charge of his patients, the latter declined to do so, and resigned his care of the foul patients. Mr. R. Young was elected surgeon.

The Kingsland Lock afterwards became a sort of public room. The chapel attached to the Lock remained till 1846, when it was taken down. A picture of it is to be found in Archer's "Vestiges of Old London," part i., published in 1850. The inhabitants petitioned that the Rev. J. Cookson should be allowed to do duty in the chapel as heretofore, and this petition was granted, and public worship was carried on there until the middle of the present century.

[1] Guide of the Lock. [2] Guide of Kingsland.

The exact date when public worship ceased in it does not appear on the minutes. In 1841 a memorial was read from the Rev. Isaac Hills asking for some remuneration as minister of the chapel at Kingsland, but the Governors replied that the request could not be complied with; and at a House Committee, June 9, 1846, appears the last entry referring to it. "A letter was read from the Right Rev. the Bishop of London respecting taking down the chapel at Kingsland. The Treasurer's answer was read and approved."

The condition of the church and vicarage-house and the conduct of the services occupied the attention of the Governors during 1756. The church-bell was recast; it was decided to build a new vicarage-house, but this decision was not acted on for many years.[1] The sisters were ordered—

"On every Sunday to assemble together in the Admitting-room, and do walk thence in procession to church, and that the Portor do see this order put into execution, and inform the Treasurer of the names of the Sisters who are absent."

The sisters of the present time would hardly like to be under the superintendence of the porter; it is to be remembered, however, that the porter was a more important officer then than now. In the year 1758 another order, which is worth quoting, relating to the internal management of the Hospital, was made. "That all the troughs and boxes for gardens in the windows of the new pile of buildings be immediately removed, and no more suffered to be placed there." From this it seems evident that window-gardening was practised more than one hundred years ago—a fact I was not prepared for. Why this peremptory order was given I failed to find out; possibly a flower-pot may have fallen on or near the Treasurer's head. In this year the foundation-stone of the last pile of buildings was laid on April 27.

From an entry in the year 1762 it appears that Barbara Cripple was barber to the Hospital, and I gather that up to that time, and for a few years longer, the barber had usually, if not always, been a woman. She had an increase of salary in consequence of the increase in the number of the foul patients. In ten years time we find that Barbara Cripple had changed her name to Adams—

"And had removed from her place of residence near the Hospital, and

[1] One reason which delayed the building of the vicarage-house was the bankruptcy of the Treasurer, who owed the Hospital £3254, 1s. 6½d. A Special Court decided to postpone the building. In 1774 the question was again under consideration, and it was decided to build a vicarage to the east of the church. This decision was not at once carried out, and it was several years later before the vicar was housed somewhere near where the Abernethy block now stands.

that there have been various complaints against her for improper conduct on diverse occasions; it is ordered that she be discharged as Barber on Midsomer day, and that a man barber be elected in her stead."

No mention is made of the salary, but in 1794 the salary was fixed at £28 per annum for shaving all the patients and all the casualties; but nothing is said about hair-cutting.

Mr. William Holland left a legacy to the Hospital in the year 1762 for the purpose of building a house for a surgeon to reside in within the Hospital, and about this time the subject of a resident surgeon was constantly before the Governors; but it was not until six years later that a surgeon was resident within the walls. On August 10, 1768—

"Ordered that the orders of the Court, May 16, 1766, respecting a house for a resident Surgeon be acted upon." "It is ordered that the principal Surgeons of this Hospital, some or one of them, by themselves or their sufficient Dresser or Assistant, do reside alternately in the said apartment, that some or one of them may be always immediately ready, as well by night as by day, to assist the Patients of the Hospital."

A complete new set of rules applying to the patients was drawn up in 1767. The following are the principal ones:—

"That the visiting hours be from 4–6 in Winter and 5–7 in Summer on Sundays.

"That the back-doors of all the Wards be locked on Sundays, and the front ones during the hours of divine service.

"That the doors of the Hospital be shut at 7 P.M. in Winter and 8 P.M. in Summer.

"That no person be allowed to visit any patient before 9 A.M.

"That no person be allowed to stay more than one hour with a patient without special leave from the Matron or Steward.

"That any patient absent from the Ward at the hour of closing be discharged.

"The Surgeon to attend every Sunday morning before 10 A.M., so as to dress the patients' wounds in order that they may go to Church.

"That no malt liquor or spirit of any kind be introduced into the Wards on any pretence whatever, except under a ticket signed by one of the Physicians, Surgeons, or Apothecary."

In this year the first theatre attached to the Hospital was finished, and the physicians and surgeons requested—

"That they might have the use of it for operations, and also of the room adjoining thereto in the Pyle of Buildings lately finished, to read lectures in to their pupils and other purposes.

"For the accommodation of the Physicians and Surgeons the same is now ordered accordingly; it is further ordered that one of the Beadles do make and keep fires in the said room, to make it fit for their reception."

This theatre preceded the old Anatomical Theatre, often spoken of as Abernethy's, which was pulled down to make way for the present one. The old Anatomical Theatre was finished in 1822; the trustees of Dr. Radcliffe's bounty giving £500 to

enable the work to be completed. A new surgeon's theatre for operations was built in 1791. The estimate of its cost was £875, and it was to be finished three months from the commencement of the work. The site of this theatre was in Windmill Court.

In 1770 it was ordered "that chairs be provided in each ward for the use of the physician to sit in and prescribe for the patients." Sir G. Burrows has told me that when he was first acquainted with the Hospital these chairs were still in use, and the patients were brought up one after the other to confront the physicians. From a long petition sent in by Mrs Susannah Robinson, the matron, asking for an allowance for a servant or assistant, we find that in 1771 "the number of sisters, nurses, watchers, and helpers is over 100," and that she had to "interfere in their disputes," as well as keep a general supervision over them. Among her numerous duties she recounts—

"That she buys all the tape fillets, &c., measures, cuts out, and makes them into proper lengths for the Surgeons. The several quantities of which in the course of the year amount to over 5000 yards of tape; 400 yards of Russian cloth, for rollers and towels; 5000 yards of Irish cloth, which she makes into sheets; 100 yards of Dowlas, which she makes into shirts and shifts; 720 yards of striped Barras for bedticks; 140 yards of check, which she makes into fracture pillows; 50 yards of flannel for different uses of the patients; 4000 skeins of thread and 50 of silk, which she divides and gives out in small quantities."

"All this she does[1] for a salary of £40 and a gratuity of £20 per annum, a house, coals, and six dozen candles, a quantity not sufficient to do the Hospital work by."

Her petition was favourably received, and her salary raised to £100 per annum without a gratuity.

A good many years now elapsed before there is any entry in the Journal of general interest. In 1787—

"It was ordered that apartments be partitioned off from the Wards for the accommodation of such persons who may happen to be bit by mad dogs, in the same way as the Sisters' rooms are, and they be done under the direction of the Treasurer and Almoners."

As the order stands, it reads as if a room was to be partitioned off from every ward for hydrophobic patients; but the disease could hardly have been so rife as to require as much accommodation as that would have given. I do not feel very sure that the order was acted on; there does not appear to have been any provision for noisy and delirious patients as late as 1820—

"When, in compliance with an order of the last General Court, the Surveyor produced a plan and estimate for a strong room and other desirable improvements near the north-wing of this Hospital."

[1] And much more which would not be of any interest to enumerate.

The plan was approved and referred to the next General Court for confirmation. What the General Court did with the report does not appear in the Journal.

In 1791 a committee was appointed to examine into the fees paid to the matron and sisters. Although the labours of this committee were useless, as, "after reading their report, the Court decided that matters should be left as they are," it may be regarded as the first of a number of select committees which at the commencement of the present century went most thoroughly into the internal management of the Hospital, and reformed many abuses, and were instrumental in abolishing completely fees and perquisites, and placing all the officers and servants on fixed salaries. During the last fifteen or twenty years of the eighteenth century, the nursing staff of the Hospital appears to have been in very bad order, as there are numerous entries of the discharge of sisters and nurses for drunkenness and other misbehaviour. On one occasion the sister, nurse, and watch of Luke's Ward are all dismissed together for "drunkenness and profane swearing."

From the commencement of the present century until the time of living persons, there are not very many entries of general interest, if I except those which have a bearing on the school. These are so numerous and important between the years 1820–1840, that I shall make no attempt to extract them, but leave them to the future historian of our school.

In 1803 application was made by the promoters of a canal and railway from the Grand Junction Canal, Paddington, to the London Docks, to know if the Hospital would oppose its passing through any of their property. No objection seems to have been made; but it is to be remembered that the term railway then meant only what we now call tramway, *i.e.*, horse-power was to be used, not steam. Had our conservative Governors had an idea that steam would have been used, I fancy the promoters would have met with scant support. Seven years later the conservative spirit of the Governors led them to draw up a petition to Parliament against the removal of Smithfield Market, as they feared a depreciation in the value of their property. Sixteen years later, though they again decided to oppose the removal of the market, the ostensible grounds on which they founded their opposition were the "loss of the free open space and probable deterioration of the air on the market side of the Hospital." Nearly twenty years more elapsed before the market was removed to Islington, to the great advantage of the Hospital and the public in general.

In 1813 the house-surgeons, who had hitherto had certain

allowances of bread, milk, candles, coals, tin and turnery ware, and some bed-linen, computed to be worth about £40 per annum, were given in lieu a fixed salary. By an order of the Court the next year, the number of dinners to be held in a year at the Hospital expense were limited to two—one on Easter Monday, and one on St. Matthew's Day, *i.e.*, 21st of September; the President to have the privilege of inviting six, the Treasurer four guests; no other Governor to be allowed any. It was also decided to leave to the Treasurer's discretion the arrangement and repair of the preparations for illuminations over the gateways. This is the only entry that I find in any way pointing to the celebration of our great victories at the beginning of this century, or to the public rejoicings which occurred in 1814 and 1815.

In 1818 the medical and surgical staff wrote a letter to the Treasurer and Almoners representing that the nursing staff was inadequate, one sister and only two nurses being allowed for each double ward. No answer to this letter appears on the minutes. Three years later special dresses (I believe the ones now worn) were chosen for the sisters and nurses.

The foundation-stone of the present out-patient rooms was laid by the Treasurer, Hugh Powell, Esq., on the 24th of March 1818, in the presence of many Governors, and an appropriate prayer was delivered by the Rev. W. Wix, the chaplain. There is no mention of any prayer or religious ceremony accompanying the foundation of any of the main blocks.

I think that about this time the old admission-room, now converted into the Electrical Department, was built. At all events, very shortly after this, in 1820, complaints are made by the medical staff of its inappropriateness and draughtiness; and at the same time they recommend that the patients should be discharged direct from the wards when ready to leave the Hospital, instead of being all discharged on one day in the week. This recommendation was, I believe, acted on, but the scarcely less evil of an admission-day was not done away with till more than forty years later.

In 1831 the quadrangle is ordered to be lighted by gas, but I find no mention of when gas was introduced into the wards. Six years later—

"It was referred to the Treasurer and Almoners to consider and report whether it would be expedient to have baths and water-closets on the Landings of the different Wings of the Hospital."

In 1832 the presence of cholera caused our governing body to take steps to meet the requirements of the Hospital, and it was determined on February 18—

"That there should be an auxiliary Hospital for Cholera patients; that Dr. Burrows should be appointed Physician and Mr. Lowe Wheeler Apothecary to it."

Premises (late Morgan's) in Smithfield were used for this auxiliary hospital, and the patients admitted were to be restricted to inmates of the Hospital and parishioners.

This year is noticeable also for the first mention of a convalescent hospital. A. Sinclair Gordon, Esq., seconded by Sir James Williams, proposed—

"That it be referred to the Surveyor to report what ground now belonging to the Hospital in Maiden Lane or elsewhere could be appropriated for the erection of a Convalescent Hospital."

One year subsequently, on March 1, 1833, a plan was submitted by the surveyor. For nearly forty years this idea of a convalescent hospital was from time to time entertained by the Governors of the Hospital, but it never took definite shape until the liberality of our present Treasurer gave to the Hospital the use of Lauderdale House at Highgate until such time as a fitting convalescent home could be obtained.

The year 1836 saw the staff of the Hospital increased by the addition of two assistant-physicians, Drs. F. J. Farre and Jeaffreson being appointed together. In the following year another addition was made; in compliance with a proposition made by the staff, Mr. Rogers was appointed dentist to the Hospital. In this year Mr. Wormald, then an assistant-surgeon, brought before the House Committee the subject of maniacal patients and the disturbance they caused to other patients. The consideration of the matter was postponed, and referred to the Treasurer and Almoners. After the lapse of fifty years we find the same subject under consideration. Until Mr. Wormald's suggestions were acted on, I believe that there were no special wards in which maniacal patients could be placed; the provision for hydrophobic patients mentioned on p. 41 having either never been carried out or having been given up.

In concluding this sketch of the rise and growth of our Dispensing Department, it may interest my readers very briefly to review the increase in the numbers of our patients during the last fifty years, and the corresponding rise in the consumption of some of the more important of the drugs used in their treatment. These statistics I am able to give through the kindness of our present dispenser, Mr. Jeffs, who has extracted the quantities of the drugs yearly ordered as they appear in the shop ledgers, which have been kept with scrupulous exactness since the year 1836. From these ledgers not only the quantities of the drugs

received in the shop can be obtained, but also the exact date on which any remedy was first used in the practice of our Hospital; and how, as evidenced by their increasing popularity or the reverse, they bore the test of trial in the unfashionable, and perhaps sceptical, air of the Hospital. It is not a little remarkable to note the steady, and, in many instances, rapid increase in the use of preparations which have eventually stood the test of time, and proved themselves of real value in the treatment of disease, whilst others soon fell into complete oblivion.

Sulphate of Magnesia.—The drug which is used in the largest quantities in the practice of the Hospital is sulphate of magnesia, which is principally consumed in the two preparations, Hst. sennæ co. and Hst. menthæ sulphuricus $\bar{c}$ magnesiæ sulphate. The very great increase[1] in the last thirty years over the preceding twenty may be taken as a measure of the increase in the out-patient and casualty departments of our Hospital. Making allowance for the increased number of beds owing to the erection of the Abernethy block, we may, I think, assume that the amount consumed in the wards would remain much the same during the whole period of fifty years. In all probability a relatively larger amount would have been used forty or fifty years ago than now, so the increase is due to the quantity dispensed to the out-patients. Taking the ordinary dose at half an ounce, 43¾ cwts. gives the enormous number of 340,480 doses dispensed in the course of a year of this drug alone.

I find vitriolated magnesia occurring in our Pharmacopœia for 1799; in the earlier edition, 1764, sal catharticus amarus appears, which was the natural salt obtained from the Epsom waters, or from bittern, the residual liquor of sea-water after the deposition of common salt. It must be remembered that the manufacture of this salt from dolomitic limestone, its present source, was not known until the beginning of this century,[2] and its extensive use is partly due to its present cheapness. During the last century, as has been noted on p. 14, the purgative waters in the neighbourhood of London were largely used. It would be an interesting arithmetical question to calculate how many hogsheads of these waters, taking Professor Martyn's analysis as a basis, it would take to equal the 43¾ cwts. of sulphate of magnesia now annually used in the practice of our Hospital.

Linseed Meal and Lint.—These two articles also illustrate so

[1] *Consumption of Sulphate of Magnesia—*

1836–45	26¼	cwts.	1866–75	42½	cwts.
1846–55	27	,,	1876–85	43¾	,,
1856–65	34½	,,			

[2] *See* Dr. William Henry, Philosophical Transactions, 1810.

forcibly the increase in the work done by the Hospital, that I extract their statistics.

The amount of linseed meal used at the very commencement of the present century I do not know, but in the minutes of the Shop Committee there are frequent entries having reference to the large and increasing amounts used, and also to disputes with the contractor for it as to price and quality. In 1836 the quantity amounted to 175 cwts. or $8\frac{3}{4}$ tons; in ten years this had risen to $229\frac{3}{4}$ cwts. or $11\frac{1}{2}$ tons, and it remained at about this figure, or rather more, until 1865, since which time it has gone on increasing, so that the average for the last ten years is no less than 315 cwts., equalling $15\frac{3}{4}$ tons.

The growth in the consumption of lint is even more remarkable; 809 lbs. sufficed to supply the wants of the Hospital in 1836, whilst 4579 lbs. were required in 1885. I confess that, taking into consideration the quantity of antiseptic dressings now used in the wards, I expected that the amount of lint would have fallen off; but last year heads the list. The average quantities are given below, as well as the average number of patients:—

1836–45	987 lbs.	42,197	patients.
1846–55	544 „	78,293	„
1856–65	649 „	~~178,393~~	„
1866–75	1755 „	135,967	„
1876–85	4288 „	166,137	„

It is very remarkable that the two decades from 1846–65, with an average of more than double the number of patients, required less lint than the first. Still more surprising is it to find that an average increase of only thirty thousand patients has more than doubled the consumption of lint during the last ten, and this whilst the use of antiseptic and other dressings would, one might have supposed, have led to a diminution in the consumption. Nevertheless 4579 lbs. or upwards of two tons, a stupendous quantity, is apparently annually required by our patients.

The total cost of antiseptic dressings during the last two years has been as follows:—For the year ending Michaelmas 1885, £409, 14s. 9d.; for 1886, £443, 1s. 4d. The principal items in 1885 were—Iodoform gauze, £6, 14s. 9d; pink protective, £86, 10s. 3d.; iodoform wool, £61, 13s.; carbolised tow, £13, 4s. In 1886 iodoform gauze increased to £84, 14s. 6d.; pink protective fell to £49. 4s.; iodoform wool rose to £139, 16s.; and carbolised tow to £18.

In connection with the change which has occurred in modern practice with regard to the administration of mercury, I thought

I would try and work out the statistics of calomel, blue pill, &c.; but owing to the Hospital at one time, buying its preparations of mercury ready made, and at another manufacturing them in its own laboratory, I was unable to obtain any satisfactory figures relating to this drug.

Leeches.—I have quoted on p. 27 the letter of the Treasurer to the Shop Committee in 1823 on the subject of leeches, complaining that the number had risen to 1000 per week. Large as this number appears, it was soon exceeded, and the maximum was reached in 1837, when the enormous number of 96,300 were used. After this they began to decline in numbers; 93,500 were found sufficient in 1838, and from that date to 1868 the decrease was continuous. In 1868 the number used was 2200, and the average for the years since then has been 1770. I find that in the year 1837 the number of patients was 50,557, of whom 27,077 were casualties, 18,028 out-patients, and 5452 in-patients. I presume that by far the larger portion of the leeches were for the benefit of the in-patients; but if only half were so used, it leaves nine leeches and a third of a leech for each in-patient. When we consider that this was but one way of abstracting blood, and that the cupper's fees were so numerous that Mr. Atkinson was given a salary of £50 per annum as consulting-cupper in 1840, we may well ask ourselves if we make sufficient use of these blood-suckers now-a-days. For my own part, I believe that they are not nearly so much used as they ought to be for the relief of pain.

Bark.—Bark and its preparations first appear in the copy of our Pharmacopœia given by Theophilus Philanthropos, 1739; but I have before given my reasons for thinking that Dr. E. Browne used it in his practice fifty years earlier. In our next Pharmacopœia, 1764, only two formulæ are given of Hospital preparations of bark, the paralytic tincture and a decoction. In our next Pharmacopœia, 1799, we find two formulæ for infusion of bark. In 1832 a compound infusion appears containing the peel of oranges and sulphuric acid, and a liquor cinchonæ cordifoliæ as well as a liquor quininæ sulphatis.

During the last fifty years the amount of bark used in the annual practice of the Hospital has fluctuated somewhat strangely, and is very much less now than it was twenty years ago, notwithstanding the vast increase in the numbers of the out-patients. This decrease cannot be accounted for by the greater use of quinine, as the quantities used of that drug have varied much in the same way. Possibly the much greater use of quassia as a bitter tonic may have something to do with it, as the growth in the consumption of quassia is very startling. In

the ten years from 1836–46 quassia appears to have been hardly ordered at all; only four entries in the ledger appearing, amounting in all to 60 lbs. After 1844 it appears annually and in rapidly increasing quantities. In the footnote the yearly averages of these drugs are given.[1]

Quassia.—Quassia, which is now used very largely in the practice of the Hospital, principally in the shape of our Hst. quassiæ c̄ ferro, made its first appearance in the Pharmacopœia for 1799. I find there an infusion as follows:—

> Quassiæ contusiæ ℥j. } Macera per horas duas et liquori
> Aq. ferventis, Libram. } colato adde Tinct. Zingiberis ℥ss.
> Dosis. unciæ duæ, sextâ quâque. horâ.

It disappears from the 1832 edition, and does not reappear until 1869.

Bromide and Iodide of Potassium.—I have been unable to find out when these substances were first used in the practice of our Hospital; both iodide of potassium and the bromide appear in the ledger for 1836, and in considerable quantities, 4 lbs. being ordered of hydriodate of potash and 1 lb. of bromide. For many years the bromide was scarcely used, but for the last twenty it has been used in increasing quantities, the average yearly quantity used between 1866–75 being 146 lbs.; between 1876–85, 347 lbs. The growth in the consumption of the iodide has been regular, as the following table shows:—

1836–45, yearly average, 105 lbs.	1866–75, yearly average, 360 lbs.
1846–55 „ „ 221 „	1876–85 „ „ 463 „
1856–65 „ „ 214 „	

The very great increase in the consumption of bromide of

[1] *Annual Average Consumption of Bark, Quinine, and Quassia since* 1836.

Years.	Bark.	Quinine.	Quassia.
	Lbs.	Oz.	Lbs.
1836–45	196	143	6
1846–55	642	346	12
1856–65	878	967	56
1866–75	891	763	506
1876–85	501	1,123	496

Since the year 1869 cinchonine, quinidine and cinchonidine have also been made use of in quantities which bring up the average of the alkaloids from bark to about the amount of quinine alone during the decade 1856–65. Quinidine and cinchonidine are again discontinued, and the amount of quinine has correspondingly risen. It must be remembered, too, that the comparatively modern liquid extract of bark, which is a good deal prescribed, does not appear on this list, and should be added to the bark used.

potassium of late years is mainly due to the great use made in the casualty department of the Hst. pot. bromidi co., introduced by Dr. Brunton, in which 10 grs. of the bromide of potassium takes the place of the bicarbonate of soda in the equally popular Hst. gentianæ c̄ rheo. I was somewhat surprised to find that iodide of potassium was so largely used fifty years ago in the practice of the Hospital, and it is one of the many instances in which a really valuable drug rapidly gained favour in hospital practice.

I do not think that iodine or any of its preparations had attracted much notice in this country until after the publication by Sir W. Brooke O'Shaughnessy of his translation of Lugol's work, 1831, although several years before Manson[1] had published a volume on "Medical Researches on the Effects of Iodine in Bronchocele, Paralysis, Chorea, Scrofula, &c. &c." And I think that we may justly say that our medical staff were not slow in availing itself of this valuable drug.

Cod-Liver Oil.—Among the well-established remedial agents which have been introduced during the last fifty years, cod-liver oil holds a very prominent position. It is somewhat remarkable that it is almost the only really valuable drug which was slow in finding favour with the medical staff at our Hospital. Although the oil had been used therapeutically for years, and had been admitted into the Pharmacopœias of Prussia, Hanover, Saxony, and Slesvig-Holstein before Dr. Hughes Bennett wrote his treatise in 1841, his work may be said to date its introduction to the medical profession in this country. Five years elapsed between the publication of his treatise and the appearance of the oil on our ledger, the first entry being dated June 18, 1846; but it was not until the following year that it took its place among the regular drugs ordered by the Hospital. In 1847, 17 gallons were used; in 1848, 20. In 1849 the amount rose to 140 gallons: this was probably due to the very favourable account given in the first Medical Report of the Brompton Hospital of its value in phthisis. Up to the time of Dr. Hughes Bennett's treatise, it had chiefly been administered for the treatment of chronic rheumatism. Its value in this disease had been recognised by the fishing population of the German Ocean from time immemorial, and it had been largely used in this disease during the end of the last century by the physicians of the Manchester Infirmary, Dr. Kay being one of the first members of the staff who made use of it. Dr. Bardesley in 1807 in his Medical Report says: "This medicine has preserved its reputation in our infirmary unimpaired during the period of thirty years, for I

[1] 1825.

find its consumption to have been from 50 to 60 gallons soon after its introduction in 1766, and the quantity dispensed for many years has seldom fallen below the above amount."

From the year 1849 onwards its consumption at St. Bartholomew's steadily increased, although there are some curious fluctuations in the years. The largest quantity was last year, when 1873 gallons were ordered. The average consumption is shown in the accompanying table :—

1847	17 gallons.	
1848	20 „	
1849	140 „	
1850—55 . . .	379 „	yearly average.
1856—65 . . .	856 „	„ „
1866—75 . . .	947 „	„ „
1876—85 . . .	1368 „	„ „

Ergot.—The medicinal use of ergot is not very old, although the baneful effect of its presence on grain used for food has been recognised for 200 years. According to Pereira, Lonicerus is the first botanical writer who mentions ergot. Camerarius in 1707 wrote a dissertation on it, and from that time onwards many treatises have been written on the subject, but most of them are occupied by discussing the nature of the fungus and the effects of its ingestion in bread-stuffs. Its specific action on the uterus appears to have been known to German midwives and sage women at the time that Camerarius wrote, but the subject was not properly investigated by competent observers for many years. Dr. J. B. Desgranges, finding that it was made use of by the midwives of Lyons, began as early as 1777 to study its effects, and he may be regarded as the introducer of the drug into the practice of French physicians. In this country the use of ergot did not attract much attention until after the publication in America of the pamphlets of Drs. Stearne (1808) and Prescott (1813). The use of ergot gave rise to much difference of opinion in America, and to the use of rather strong language. Dr. David Hosack, in a letter dated June 2, 1822, to Dr. James Hamilton, jun., Professor of Midwifery in Edinburgh, writes thus: "Ergot has been called by some of the books, from its effect in hastening labour, *pulvis ad partum;* as regards the child, it may with almost equal truth be denominated *pulvis ad mortem.*" At the same time he recommends it strongly in cases of uterine hæmorrhage occurring at the climacteric.

It was not until after the publication of Neale's work,[1] in which almost all that was known about ergot, its use and effects, was

[1] "Researches on the Natural History, Chemical Analysis, and Medical Virtues of the Spur or Ergot of Rye, &c. &c." This work is based on that of A. C. L. Villeneuve, Paris, 1827, on the same subject.

published in 1828, that English practitioners began to make much use of the drug, and the differences of opinion as to its advantages were as great apparently in this country as in the United States.

Ergot does not seem to have found favour in the practice of the Hospital until many years later, as its first appearance in the shop ledger is not until the year 1842, when a quarter of a pound of the powder was ordered, and it is not until the lapse of twenty years that any considerable amount was used. I find that the average amount from 1851–60 was only about 1¼ lbs. Since 1860 the quantity has increased enormously, the liquor ergotæ taking the place of the powder. Thus the average amount of the liquor ergotæ from 1861–70 is 27½ lbs., besides a small quantity of the powder. From 1870 to the present time the annual consumption has averaged 146 lbs., the largest quantities being used in the years 1876–77, when upwards of 250 lbs. were needed in each year. Since that date the consumption has fallen again, possibly owing to the introduction of ergotine, so that now the annual consumption appears not to be more than about half the quantity in 1877. During these sixteen years the powder has completely fallen out of use.

Chloroform.—The first appearance of chloroform in our ledgers is November 22, 1847, just one week after the appearance of Sir J. Y. Simpson's pamphlet on "Chloroform as a Substitute for Sulphuric Æther in Surgery and Midwifery." At first the consumption does not seem to have been great; 17 lbs. sufficed for the year 1848, and the consumption did not rise above 24 lbs. until the year 1855, when it reached 59 lbs. The average yearly consumption during the last ten years reaches 286 lbs., and during the preceding ten years, that is, from 1866 to 1875, to 241 lbs. If the last five years alone be taken, the consumption rises to 339 lbs.; a result which I was not prepared for, seeing how largely gas and æther are now used. I believe that the explanation is that chloroform is much more frequently administered in the out-patient and casualty practice of the Hospital than formerly, with a corresponding diminution of avoidable pain.

Chloral Hydrate.—Turning now to chloral hydrate, I find that its first appearance was in January 18, 1870. Liebreich's pamphlet on the drug was published in Berlin in the preceding year, but I do not know at what period of the year.[1] Bouchut published his pamphlet "Des Effets physiologiques et thérapeutiques de l'Hydrate de Chloral" the same year.

[1] His original communication was presented to the Akademie der Wissenschaften in Berlin on June 3, 1869, and was published in Virchow's Archives, Bd. xlvii. Hft. i. p. 155 (1869).

Chloral seems at once to have gained favour, and was used nearly as largely in the first and second years after its introduction as now; its use then for a couple of years declined considerably, and the average consumption of the remaining twelve years has been between 17 and 18 lbs. a year.

Croton-chloral-hydrate.—This drug appears for the first time in 1872. It has never been much used; the consumption was the greatest during the years 1877, 1878, 1879. The average consumption since its introduction has amounted to about $7\frac{1}{2}$ oz. per annum.

Strychnia.—Strychnia is another drug which appears in the ledger in 1836. It was first included in the London Pharmacopœia in 1850, but the consumption in our Hospital practice remained very small until about the year 1870. During the last fifteen years the average consumption has reached 4 oz. yearly.

Morphia.—Both the acetate and hydrochlorate of morphia are met with in our oldest ledger in 1836. At that time the acetate was the preparation most in demand; whereas at the present time nearly as much hydrochlorate as acetate is consumed. I append a table showing the growth in the consumption of the two during the last fifty years:—

1836–45.	Morphia (Acetate of),	$6\frac{4}{10}$ oz.	(Hydrochlorate),	$1\frac{1}{10}$ oz.
1846–55.	„	„	$14\frac{4}{10}$	„	$1\frac{4}{10}$
1856–65.	„	„	$19\frac{1}{2}$	„	$4\frac{1}{10}$
1866–75.	„	„	$30\frac{3}{10}$	„	$33\frac{1}{10}$
1876–85.	„	„	$19\frac{8}{10}$	„	$15\frac{1}{10}$

From this table the great decrease in the use of morphia during the last ten years is very apparent, notwithstanding that the number of our patients is larger than ever. Preparations containing morphia are not used in the casualty department, and the out-patients use comparatively little, chiefly in the draught Hst. morphiæ c̄ ferro, and in the Linctus morphiæ c̄ chloroformo. There can be little doubt, therefore, that the principal cause of this decrease in the amount of morphia used depends mainly on the substitution of chloral as an hypnotic.

Atropine.—Atropia, which was discovered in 1819 by Brandes, was a long time in making its appearance in the books of the Hospital. The first entry is in 1861; and the sulphate, though introduced in the tenth edition of the London Pharmacopœia, does not seem to have been used with us until 1868. Since then the consumption of both atropia and its sulphate have grown with the development of the Ophthalmic Department, though it must be remembered that a not inconsiderable quantity of these drugs is now made use of in the medical wards. The average amount used during the last ten years has been $3\frac{1}{2}$ oz. of atropia, and $2\frac{2}{5}$ oz. of the sulphate.

Glycerine.—Turning now to substances which have only recently been introduced into pharmacy, I will briefly state the extraordinarily rapid increase in the amounts used of a few, which, whatever they may do in the future, have during the last few years played a most important part in the treatment of disease. Of these, the oldest in point of appearance is glycerine, which I first find in the ledgers of the Hospital in 1852, the modest quantity of 32 lbs. being ordered in that year. From that time onwards the growth in its consumption has been gradual and uninterrupted, until last year it reached the enormous amount of 2303 lbs., or upwards of a ton. The following table shows the average quantities used yearly since its introduction :—

From 1852–55, 4 years .	28¼ lbs.	From 1871–75, 5 years .	627 lbs.
„ 1856–60, 5 „ .	75 „	„ 1876–80, 5 „ .	860 „
„ 1861–65, 5 „ .	206 „	„ 1881–85, 5 „ .	1810 „
„ 1866–70, 5 „ .	587 „		

I must confess that I was quite unprepared for the very great increase during the last five years, and I am unable to account for it, as during that time the practice of the Hospital has not altered, nor have the numbers of the patients increased. The Hospital seems early to have availed itself of this useful substance, for Mr. T. Wakley's reports on the use of glycerine in the treatment of certain forms of deafness, dated 1851, are the earliest mention that I can find of glycerine as a remedial agent.

Carbolic Acid.—Eleven years after glycerine carbolic acid makes its first appearance in the ledger, on March 17, 1863, when 5 lbs. were bought. In the following year only 1¾ lbs. were bought, and in 1865 a single pound sufficed to supply the wants of the Hospital. The increase from that date is shown in the table :—

1866–70, 5 years, .	average 47 lbs.	1876–80, 5 years, .	average 567 lbs.
1871–75, 5 „ .	„ 73 „	1881–85, 5 „ .	„ 1267 „

These quantities refer to the pure acid; a small quantity of the impure acid for use in the Hospital drains has also been consumed.

Iodoform.—Iodoform makes its first appearance on December 28, 1875, when two ounces were obtained. The following year a quarter of a pound was ordered, and next year 4¾ lbs. As it has only been in use ten years in the practice of the Hospital, it may be best to give the actual amounts, and not the averages :—

1875, 2 oz. ordered 28th December.	1881, 48 lbs.
1876, ¼ lb.	1882, 90 lbs.
1877, 4¾ lbs.	1883, 102 lbs.
1878, 14 lbs.	1884, 115 lbs.
1879, 29 lbs.	1885, 90 lbs.
1880, 50 lbs.	

Salicylate of Soda.—Salicin and salicilic acid had been used in the practice of the Hospital before salicylate of soda, but as a much larger quantity of the later drug is now used than of either of the former, I take the soda salt to illustrate the use of salicin and its compounds in our Hospital practice. The first entry of salicylate of soda is January 20, 1877. During that year 25 lbs. were used; 46 lbs. the following year; and since then the average consumption has been 75½ lbs.

Vaseline.—The last substance introduced into our Pharmacopœia to which I shall draw your attention is vaseline, and the rapidity of its increase is the most marked of all. Introduced in 1878 as a dressing for wounds, &c., it has now become the basis of most of the ointments used in our practice; and in the eight years during which it has been in use the quantity consumed has increased from 20 lbs. to almost a ton and a half, as will be seen by the following table:—

1878, 20 lbs.	1882, 1416 lbs.
1879, 150 lbs.	1883, 1672 lbs.
1880, 425 lbs.	1884, 2060 lbs.
1881, 785 lbs.	1885, 3257 lbs.

With this enormous increase in the amount of vaseline used as a basis for our ointments, one would have expected a corresponding decrease in the amount of lard; but I find that this is not the case. Lard is still used for the manufacture of our zinc, sulphur, white precipitate, and some other ointments; but it is mainly in the shape of the three former that we use about one ton and a half of lard annually. Verily scabies and lice should soon be extinct in the neighbourhood of our Hospital.

APPENDIX A.

LIST OF APOTHECARIES, WITH THE DATES OF THEIR APPOINTMENT.

1572.—William Weston. Discharged for inattention to his duties.
1585, October 23.—John Napper. Described as Grocer.
1588, Michaelmas.—Roger Gwynne.
1614.—Humfrey Croxon.
1616.—Tobias Wynn or Winck. Resigned.
1618, January 16.—John Evans.
1619, Michaelmas.—Richard Glover.
1648, Michaelmas.—William Greene. Died.
1660, May 22.—Francis Bernard. Elected Physician.
1678, November 20.—Charles Ffeltham. Died.
1693.—John Blaxton or Blackstone. Resigned.
1712, August 4.—William Curwen (had been apprentice of Charles Ffeltham). Discharged, being unable from illness to do his work properly.
1728, August 1.—Thomas Northey. Resigned.
1748, July 14.—Ishmael Parbery. First Resident Apothecary. Salary, £100, a house free, three chaldron of coals, four dozen candles, £50 for servants in laboratory. Died.
1749, September 7.—Thomas Robinson. Died.
1767, July 31.—William Robinson (nephew of Thomas). Resigned.
1799, August 23.—William Nicholson. Died.
1806, December 6.—Thomas Wheeler. Resigned.
1821, July 11.—Charles W. Wheeler. Resigned.
1835, November 10.—Philip Johnson Hurlock. Died.
1847, March 16.—Frederick Wood. Resigned.

APPENDIX B.

SHOWING THE NUMBER OF PATIENTS TREATED AT ST. BARTHOLOMEW'S HOSPITAL AT INTERVALS OF TEN YEARS SINCE 1836.

Year.	In-Patients.	Out-Patients.	Casualties.	Total.
1836	5,548	11,495	20,915	37,958
1846	5,831	19,758	31,536	57,125
1856	5,933	20,055	58,388	84,376
1866	5,205	17,644	111,882	134,731
1876	5,174	19,574	127,867	152,615
1885	7,412	18,847	130,822	157,081

REPORT

FROM

THE ELECTRICAL DEPARTMENT.

BY

W. E. STEAVENSON, M.D.

I have in this paper continued the tabular record, contained in vol. xix. of the Hospital Reports, of the in-patients who have been referred, either for treatment or for an examination of the condition of their muscular or nervous systems, to my two assistants or myself. The list is complete to the end of September 1886. There has been no diminution in the variety and number of the cases. This is perhaps better seen in the list of 876 out-patients who have been treated in the Electrical Department. They are arranged under the heads of the affections from which they were suffering. Many of the in-patients for whom electricity was employed continued their treatment as out-patients after they were discharged from the wards, but they have not been again included in the second list.

Table of In-patient Cases.

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
1	M.	39	John.	Dr. Duckworth.	Paraplegia.	Testing. Nov. 16, 1883.	Electrical reactions obtained in both legs, exaggerated in left. Slight loss of electro-sensibility in left leg. Seems to tally with increased muscular excitability shown by extreme "ankle clonus" and "knee-jerk" noticed in left leg.
2	M.	30	John.	Dr. Duckworth.	Disseminated sclerosis.	Testing.	Electrical reactions normal.
3	F.	2	President.	Mr. Walsham.	Infantile paralysis.	Testing.	Loss of faradic contractility in gastrocnemius and soleus of right leg.
4	M.	23	Mark.	Dr. Andrew.	Hypochondriasis.	Testing.	Electrical reactions normal.
5	F.	33	Martha.	Dr. Duncan.	Carcinoma of cervix uteri.	Amputation by galvano-cautery.	Nov. 1, 1883.
6	M.	37	Henry.	Mr. Smith.	Lepra anæsthetica.	Testing.	Case reported in St. Bartholomew's Hospital Reports, vol. xv.
7	M.	3	Stanley.	Mr. Walsham.	Talipes calcaneus (right foot).	Treatment.	Gastrocnemius to be galvanised.
8	F.	70	Hope.	Dr. Andrew.	Tic-douloureux.	Treatment by continuous current.	Relieved.
9	F.	44	Hope.	Dr. Andrew.	Hysteria.	For testing muscles.	Single.
10	F	27	Lucas.	Mr. Langton.	Facial paralysis.	Treatment.	Following removal of parotid tumour.

11	M.	26	Darker.	Mr. Langton.	Division of ulnar nerve.	Arm galvanised after operation.	Ends of nerve joined, Dec. 11, 1883.
12	M.	3	Stanley.	Mr. Walsham.	Talipes calcaneus.	To test muscles.	... ...
13	M.	10	Kenton.	Mr. Marsh.	Spinal meningitis.	To test muscles.	No loss of faradic contractility. No impairment of sensation. Increased galvanic irritability in peronei and tibialis anticus of left leg.
14	F.	60	Martha.	Dr. Duncan.	Epithelioma vulvæ.	Removed by galvano-cautery.	Jan. 5, 1884.
15	F.	42	Martha.	Dr. Duncan.	Lupus.	Removed by galvano-cautery.	... ...
16	M.	33	Darker.	Mr. Langton.	Fractured femur, followed by stiff knee.	To be galvanised, Dec. 31, 1884.	Accident, June 29, 1883.
17	M.	54	John.	Dr. Duckworth.	... ...	For testing.	Electrical reactions normal.
18	M.	35	Abernethy.	Mr. Savory.	Lateral sclerosis.	To test muscles.	Increased electrical irritability in both legs. Rigidity.
19	M.	11	Kenton.	Mr. Savory.	Division of posterior interosseous nerve. Punctured wound of right fore-arm.	To test muscles.	Loss of electro-excitability in muscles supplied by posterior interosseous n. of right arm. The supinator longus responds readily.
20	M.	15	Harley.	Mr. Willett.	Dropped wrist (left). Injury to left musculo-spiral nerve.	For testing muscles. Both thighs, both humeri, left clavicle, and radius fractured. Right fore-arm almost removed by accident.	Loss of faradic contractility in muscles supplied by posterior interosseous nerve (A. C. C. >C.C.C.) in same muscles showing some degeneration.
21	M.	52	John.	Dr. Duckworth.	... ...	For testing. The case having been submitted to a committee of the Clinical Society.	Electrical reactions normal, with the exception of muscles of ball of right thumb, which do not respond.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result and Remarks.
22	F.	13	President.	Mr. Willett.	Infantile paralysis (extensive).	To examine muscles.	... ...
23	M.	20	Rahere.	Mr. Smith.	Painful shoulder.	... ...	... ...
24	F.	24	Faith.	Dr. Church.	Hemiplegia (hysterical).	For treatment.	... ...
25	F.	38	Sitwell.	Mr. Langton.	Sciatica (right). (Pain also in right anterior crural n.)	For treatment.	Cured
26	F.	25	Lawrence.	Mr. Baker.	Infantile paralysis.	Treated.	... ...
27	F.	36	Stanley.	Mr. Willett.	Paraplegia (after confinement).	... ...	... ...
28	F.	40	Lucas.	Mr. Butlin.	Scirrhus (right breast).	Attempted removal by electrolysis.	Mr. Butlin subsequently removed the breast by the knife, but found it separated from the chest-wall in many places by a dry eschared layer. The removal by electrolysis would have been successful had not the breast been retained in its place by the uninjured skin.
29	M.	53	Darker.	Mr. Baker.	Stiffness of shoulder-joints.	Galvanic bath.	... ...
30	M.	31	Pitcairn.	Mr. Willett.	Division of ulnar nerve.	... ...	On the fourth day all sensation had disappeared from area of distribution of ulnar n. On sixth day from injury complete loss of faradic contractility in muscles supplied by ulnar n.

31	M.	58	John.	Dr. Duckworth.	Sciatica (right).	For treatment.	Did not improve. After death extensive necrosis of ischium was discovered.
32	M.	48	John.	Dr. Moore.	Locomotor ataxy (?).	For testing.	Impairment of electro-sensibility and contractility especially marked in the left leg, the muscles of which give the "reaction of degeneration" (A.C. C.>C.C.C.)
33	M.	39	Pitcairn.	Mr. Willett.	Injury to spine (ten years previously).	Perforating ulcer of foot.	Impaired electrical reactions in muscles of legs.
34	M.	...	Matthew.	Dr. Church.	Hemiplegia.	Testing.	Impaired electrical reactions. No R. D.
35	F.	35	Mary.	Dr. Gee.	Sciatica (left).	For treatment.	Cured.
36	M.	49	Mark.	Dr. Andrew.	Lateral sclerosis.	For testing.	The application of electricity to the muscles of the legs produced spasmodic rigidity of some duration. Increase of electrical sensibility.
37	M.	28	Mark.	Dr. Andrew.	Diphtheritic paralysis.	For testing.	Electrical reactions normal.
38	F.	26	Hope.	Dr. Andrew.	Diphtheritic paralysis.	For testing.	Electrical reactions normal. Sister of the preceding patient.
39	M.	48	Mark.	Dr. Andrew.	Lateral sclerosis.	For testing	Muscles of legs react to both currents. The application of the electrode to left limb produces a lengthened contraction and rigidity of the muscles. On the right side A.C. C.>C.C.C. No loss of sensibility.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
40	F.	62	Faith.	Dr. Church.	Flatulent distension of the abdomen.	In the hope of possibly giving relief.	Died of stricture of the intestine.
41	M.	4	Lucas.	Mr. Langton.	Weakness of both legs.	For treatment.	A rickety child.
42	F.	18	Magdalen.	Mr. Baker.	Condylomata. Papillomatous growth of both labia.	Galvano-cautery was used to remove the growth from the left labia. Scissors were used to cut off the growth on the right side, and the bleeding stopped with Pacquelin's cautery.	Mr. Baker thought that the galvano-cautery answered best.
43	F.	68	Elizabeth.	Dr. Duckworth.	Gout.	Examination of arms.	Electrical reactions normal.
44	M.	51	John.	Dr. Duckworth.	Disseminated sclerosis.	For testing. Examination not satisfactory, the patient being in a partially idiotic condition.	Typhus fever seven months ago.
45	M.	16	Abernethy.	Mr. Savory.	Pressure palsy (crutches).	For treatment.	... ...
46	M.	47	Mark.	Dr. Andrew.	Wrist-drop. Purpura. Rheumatism. Pleurisy.	For testing.	Loss of faradic contractility in right fore-arm complete (including supinator radii longus); impaired in left fore-arm. Patient has had rheumatic pains about body, especially of right musculo-spiral n. There is impaired galvanic irritability and electro-sensibility of both arms.
47	F.	32	Stanley.	Mr. Willett.	Cystitis. Dilatation of urethra. Incontinence.	Galvanised for the incontinence.	Cured.

48	M.	32	Mark.	Dr. Andrew.	Acute myelitis. Paraplegia.	To test condition of lower part of body.	Muscles react imperfectly to both currents; some return of sensibility, which had been in abeyance for seven days.
49	M.	52	John.	Dr. Duckworth.	Meningo-myelitis. Lateral columns affected.	To test muscles.	No marked electrical change.
50	F.	53	Hope.	Dr. Andrew.	Choreic paraplegia.	For testing.	Marked impairment of electrical reaction to both currents, with impaired sensation.
51	F.	5	Lawrence.	Mr. Baker.	Talipes-equino-varus.	To test the reaction of the wasted muscles of left leg.	The peronei and tibialis anticus are the muscles affected, but they have not entirely lost their faradic contractility. All the other muscles of both legs react normally. There is no loss of sensation. A.C.C. approaches in amplitude if it does not exceed the C.C.C.
52	M.	25	John.	Dr. Duckworth.	Lead-palsy	To test muscles of both forearms.	There is great loss of faradic contractility in extensors, especially of thumbs. The supinator longus on each side responds readily. There is some loss of electro-sensibility. The muscles supplied by the median n. have also lost their faradic contractility.
53	M.	38	Mark.	Dr. Andrew.	... ...	To test muscles of legs.	Electrical reactions normal. Sensibility somewhat impaired.
54	F.	24	Elizabeth.	Dr. Moore.	Debility after typhoid.	To test muscles of legs.	Impaired galvanic irritability and faradic contractility, except in peronei, which respond readily.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
55	F.	22	Mary.	Dr. Geo.	Hemiplegia (left), hysterical.	Treated with statical electricity. Charged negatively and sparks withdrawn.	Cured. Electrical reactions normal. May 25.—Knee-jerk excessive in left leg. Very slight in right. No ankle clonus. May 28.—Knee-jerk excessive in right leg. Ankle clonus obtained.
56	M.	33	Harley.	Mr. Willett.	Impaired movement in left elbow, wrist, hand, and fingers, caused by fracture of humerus and subsequent erysipelas.	To test muscles of arm.	No reaction in muscles supplied by ulnar or median nerves. Loss of electro-sensibility, especially in hand.
57	F.	40	Stanley.	Mr. Willett.	Incised wound above wrist.	To test muscles of hand.	There is some loss of sensation in the thumb, index, middle, and half the ring finger. All the flexor muscles react, as also do the interossei.
58	F.	1	President.	Mr. Walsham.	Infantile paralysis.	To test muscles.	... ...
59	F.	16	Lawrence.	Mr. Smith.	Injury to elbow. Stiffness of joint.	Treatment.	... ...
60	F.	67	Martha.	Dr. Duncan.	Nodular growths on vulva.	Removed by galvano-cautery.	... ...
61	M.	39	Colston.	Mr. Langton.	Paraplegia from injury.	To test muscles.	... ...
62	M.	40	Colston.	Mr. Langton.	Fractured femur, right; by turning suddenly in bed.	To test muscles. Right thigh and leg were so swollen that no information of any value could be derived from an electrical examination.	The left thigh muscles reacted normally. In left leg there was great loss of faradic contractility.

63	F.	4 mos.	Sitwell.	Mr. Langton.	Nævus on lobe of left ear.	Electrolysis.	... ...
64	F.	3	Stanley.	Mr. Walsham.	Infantile paralysis. Talipes calcaneus, right foot.	To test muscles.	No electrical reactions could be obtained in the muscles of the right calf and peronei.
65	F.	25	Elizabeth.	Dr. Moore.	Lead-palsy. Double drop-wrist. Paralysis of peronei and extensors of legs.	Galvanic bath.	Much improved. No electrical reactions could be obtained in affected muscle before treatment was commenced.
66	M.	...	Henry.	Mr. Smith.	Arterial pulsating nævus on left leg.	Electrolysis.	Tumour became more solid and pulsation less. Patient left the Hospital.
67	M.	31	Pitcairn.	Mr. Willett.	Sciatica.	For treatment.	Improved.
68	F.	19	Elizabeth.	Dr. Moore.	Chorea. All the limbs affected.	To test electrical reactions.	All the muscles appeared to react normally. The application of electricity so increased the choreic movements that no very definite opinion could be formed.
69	M.	24	John.	Dr. Moore.	Anterior polio-myelitis. Weakness and wasting of both legs (5 years).	To test muscles of legs. A sister in Elizabeth Ward in same condition. Case No. 80.	Greatly impaired electrical reactions in extensor muscles of both thighs.
70	F.	6	Elizabeth.	Dr. Moore.	Incipient disease of left hip-joint.	To test muscles.	Impaired electrical reactions.
71	F.	44	Elizabeth.	Dr. Moore.	Hemiplegia (slight); face chiefly affected.	To test muscles, especially of face.	Electrical reactions normal. Not Bell's paralysis.
72	F.	44	Hope.	Dr. Andrew.	Paraplegia.	To test muscles.	Electrical reactions normal.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
73	M.	5 mos.	President.	Mr. Willett.	Nævus.	Electrolysis.	... ...
74	M.	56	Pitcairn.	Mr. Willett.	Cystitis.	For treatment.	Greatly improved.
75	M.	...	Pitcairn.	Mr. Willett.	Aneurysm of right subclavian.	Galvano-puncture.	... ...
76	M.	34	Colston.	Mr. Langton.	Injury to spine. Paraplegia.	To test motion and sensation.	There is an area of anæsthesia corresponding to the distribution of the small sciatic nerve.
77	M.	19	John.	Dr. Moore.	Lateral sclerosis.	To test legs.	Increased faradic excitability.
78	M.	15	Pitcairn.	Mr. Willett.	Divided ulnar nerve.	To test muscles.	... ...
79	M.	9	Pitcairn.	Mr. Willett.	Fractured fore-arm (right).	To test whether ulnar or median nerve had been injured.	... ...
80	F.	22	Elizabeth.	Dr. Moore.	Anterior myelitis.	To test muscles. A brother in John Ward in the same condition. Case No. 69.	Greatly impaired electrical reactions in extensor muscles of both thighs and in both pectorals.
81	F.	44½	Faith.	Dr. Church.	Paraplegia.	To test muscles.	Greatly impaired electrical reactions in both legs and thighs, totally lost in many muscles.
82	F.	39	Faith.	Dr. Church.	Paraplegia.	For testing and treatment.	Greatly impaired electrical reactions. Improved greatly under galvanism.
83	F.	48	Martha.	Dr. Duncan.	Papilloma of cervix uteri.	Removed by galvano-cautery.	... ...

84	M.	9	John.	Dr. Duckworth.	(?) Cerebral tumour.	To test muscles.	Electrical reactions normal.
85	F.	10	Stanley.	Mr. Walsham.	Infantile paralysis.	To test muscles.	Complete loss of electrical reactions in muscles in front of left thigh.
86	F.	47	Elizabeth.	Dr. Duckworth.	Rheumatism, chiefly in shoulders.	Galvanic bath.	Improved.
87	F.	6	President.	Mr. Willett.	Infantile paralysis. Talipes calcaneus.	For report on condition of muscles.	Electrical reactions lost in muscles of right calf.
88	F.	1½	Sitwell.	Mr. Baker.	Nævus.	Electrolysis.	... ...
89	M.	28	Matthew.	Dr. Church.	Paraplegia.	For testing and treatment. Galvanic baths.	Diminished electrical reactions in muscles of both thighs; other muscles of lower extremities react normally.
90	F.	63	President.	Mr. Willett.	Pedunculated growth at orifice of vagina.	Removed by galvano-cautery.	... ...
91	F.	35	President.	Mr. Willett.	Small fistulous opening after ordinary operation for vesico-vaginal fistula.	Edges cauterised by galvano-cautery.	... ...
92	F.	47	Martha.	Dr. Duncan.	Malignant growth on anterior wall of vagina and around urethra.	Removed by galvano-cautery.	... ...
93	F.	14	Lucas.	Mr. Langton.	Malformation of arms.	To find out which muscles were absent.	... ...
94	M.	45	John.	Dr. Duckworth.	Polio-myelitis anterior chronica.	To test muscles of all the limbs.	Reactions impaired in all the muscles; absent in some.
95	M.	19	Rahere.	Mr. Baker.	Infantile paralysis, right leg.	To test muscles.	... ...

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
96	F.	42	Lucas.	Mr. Langton.	Disease of left knee-joint.	To test muscles.	Electrical reactions normal.
97	F.	27	Hope.	Dr. Hensley.	Hysteria. Sciatica.	Statical electricity. Sparks taken over course of sciatic nerve.	Cured.
98	M.	15	Pitcairn.	Mr. Willett.	Spinal paralysis occurring at the age of eleven years.	To test muscles.	Impaired faradic contractility in peronei of left leg. All the other muscles react normally.
99	F.	43	Sitwell.	Mr. Baker.	Dropped wrist following dislocation of right shoulder.	For treatment.	... ...
100	F.	14	Elizabeth.	Dr. Duckworth.	Lateral sclerosis.	To test muscles.	The application of electricity increased the contractions and rigidity. Marked loss of electro-sensibility.
101	F.	40	Elizabeth.	Dr. Duckworth.	Polio-myelitis anterior chronica.	To test muscles.	Marked loss of faradic contractility and electro-sensibility in lower extremities. R. D. present in right leg.
102	M.	38	Mark.	Dr. Andrew.	Lateral sclerosis, probably due to syphilis.	To test muscles.	Increased electrical excitability.
103	M.	15	Harley.	Mr. Baker.	Division of median nerve.	To test muscles.	Loss of faradic contractility and R. D. (A.C.C. > C.C.C.) in muscles of ball of left thumb.
104	M.	55	Luke.	Dr. Gee.	Sciatica.	Treatment.	Improved.

105	M.	13	Henry.	Mr. Smith.	Enormous nævus on outer side of left thigh.	Electrolysis.	... ...
106	M.	...	Darker.	Mr. Baker.	Small fistulous opening leading into intestine.	Edges burnt with galvano-cautery.	... ...
107	M.	21	Rahere.	Mr. Baker.	Hip-joint disease.	To test muscles.	Reactions normal.
108	F.	38	President.	Mr. Willett.	Pain and stiffness of legs.	To test muscles.	Electro-excitability impaired in both lower limbs.
109	M.	45	Abernethy.	Mr. Savory.	Old-standing disease of shoulder-joint. Neuralgia of arm and fore-arm, with wasting of muscles and complete ulnar paralysis.	... ...	Impaired galvanic and faradic contractility; lost in muscles supplied by ulnar nerve.
110	M.	24	Harley.	Mr. Willett.	Incontinence of urine following injury to lower part of spine.	For treatment.	Greatly improved.
111	M.	39	Kenton.	Mr. Savory.	Commencing gangrene of both arms.	For testing.	Electrical reactions normal.
112	M.	...	Luke.	Dr. Gee.	Sciatica.	For treatment.	Cured after he had been made an out-patient.
113	F.	20	Faith.	Dr. Church.	Sciatica.	For treatment.	Greatly improved. Cured after she became an out-patient.
114	M.	6 ms.	Sitwell.	Mr. Baker.	Nævus on back.	Electrolysis.	... ...
115	M.	21	John.	Dr. Duckworth.	Disseminated sclerosis.	To test muscles.	Electrical reactions normal.
116	M.	16	Pitcairn.	Mr. Willett.	Crushed musculo-spiral nerve.	To test muscles.	The extensor and supinator muscles of right fore-arm have lost their faradic contractility. No R. D.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
117	M.	30	Pitcairn.	Mr. Willett.	Paresis of left fore-arm, with wasting of certain muscles after rheumatic fever.	To test muscles.	Galvanic irritability impaired in some of the muscles A.C.C. C.C.C. Faradic irritability impaired in some muscles, lost in others.
118	M.	42	Darker.	Mr. Langton.	Excision of right elbow-joint.	Wasted muscles of fore-arm to be faradised.	... ...
119	M.	26	Colston.	Mr. Langton.	Injury to spine.	Muscles of paralysed legs to be tested.	Electrical reactions normal.
120	M.	39	Faith.	Dr. Church.	Paraplegia after confinement.	To test muscles.	No electrical reactions could be produced in muscles of left thigh or leg or right thigh. Slight contractions could be produced in muscles of right calf and peronei.
121	M.	19	Pitcairn.	Mr. Willett.	Paraplegia.	To test muscles of contracted and wasted lower extremities.	Great impairment of electrical reactions. No loss of sensation.
122	M.	30	Harley.	Mr. Willett.	Divided ulnar nerve, right hand.	Tested daily from date of injury.	Faradic contractility gradually disappeared in muscles supplied by ulnar nerve, and the "reaction of degeneration" appeared as early as the sixth day after injury.
123	F.	31	Casualty.	Mr. Smith.	Paraplegia from injury to spine.	To test muscles.	Electrical reactions impaired.

124	F.	42	Mary.	Dr. Gee.	Multiple neuritis, numbness and wasting of certain muscles.	To be tested and for treatment.	Electrical reactions impaired in affected muscles. Recovered.
125	F.	55	Mary.	Dr. Gee.	Lumbago.	Galvanised.	Greatly improved.
126	M.	40	Henry.	Mr. Smith.	Injury to head followed by epileptic fits. Numbness and loss of power on left side.	To test muscles of limbs on left side.	Faradic contractility normal; increased galvanic irritability in left leg.
127	M.	53	Luke.	Dr. Gee.	Hemiatrophy of tongue. Loss of power in left hand and arm.	To test muscles.	Impaired electrical reactions.
128	M.	33	Rahere.	Mr. Baker.	Divided ulnar nerve.	To test muscles.	Loss of faradic and galvanic irritability in muscles of hand supplied by ulnar nerve.
129	M.	14	Mark.	Dr. Andrew.	Paraplegia after small-pox.	To test muscles.	Electrical reactions normal.
130	M.	38	Mark.	Dr. Andrew.	Writer's cramp.	To test muscles.	Impaired electrical reactions in extensor muscles of right forearm and muscles of thumb. No R. D.
131	F.	17	Lucas.	Mr. Langton.	Partial division of right ulnar nerve.	To test muscles.	In some of the muscles supplied by the ulnar nerve faradic contractility was absent, and impaired in other muscles.
132	M.	27	Luke.	Dr. Gee.	Facial paralysis.	For treatment.	... ...
133	M.	9	Henry.	Mr. Smith.	Talipes cavus.	To test muscles.	... ...
134	F.	19	President.	Mr. Walsham.	Paraplegia (supposed spinal mischief), hysterical.	To test muscles and for treatment.	Electrical reactions normal. Got quite well.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
135	F.	55	Elizabeth.	Dr. Duckworth.	Paralysis agitans.	To test muscles. There is some wasting present.	Electrical reactions normal in quality, impaired in quantity in proportion to wasting.
136	M.	30	Colston.	Mr. Langton.	Divided ulnar nerve.	To test muscles.	Accident, May 9, 1885. May 11. A.C.C. = C.C.C. No loss of faradic contractility. May 13. No reaction to either current.
137	F.	48	Mary.	Dr. Gee.	Hysteria. Spastic rigidity of legs, arms, abdominal muscles, and neck, with continual shaking of head.	Statical electricity used as means of treatment.	Recovered.
138	F.	7 mos.	President.	Mr. Walsham.	Nævus.	Electrolysis.	... ...
139	F.	53	Stanley.	Mr. Walsham.	Division of median nerve.	To test muscles.	... ...
140	M.	5	Hope.	Dr. Andrew.	Paraplegia	To test muscles.	Electrical reactions normal.
141	M.	23	John.	Dr. Duckworth.	Polio-myelitis anterior	To test muscles.	Electrical reactions normal.
142	M.	20	Pitcairn.	Mr. Walsham.	Excision of left elbow-joint.	Great wasting of muscles of fore-arm.	Impaired galvanic and faradic contractility.
143	M.	...	Henry.	Mr. Smith.	Injury to left hand; removal of 4th and 5th fingers.	To test muscles.	Diminished electrical reactions in left fore-arm with impaired sensation.
144	F.	24	Stanley.	Mr. Savory.	Division of median nerve (left).	To test muscles of ball of thumb.	C.C.C. = A.C.C. Complete loss of faradic contractility; impaired electro-sensibility.

145	M.	24	...	...	Division of tendon of ext. min. digiti, with cutaneous anæsthesia of back of right hand.	... ...	All the muscles react normally, except extensor of little finger; impaired electro-sensibility.
146	M.	36	Matthew.	Dr. Church.	Sciatica.	Galvanised.	Cured.
147	F.	11	Stanley.	Mr. Willett.	Spurious lateral curvature.	For treatment. Galvanised and faradised.	All the muscles of back and leg react normally. Discharged cured.
148	M.	19	Pitcairn.	Mr. Willett.	MacEwen's operation for genu valgum (left). June 22, 1885.	Leg on splints for 18 days. To test muscles.	No response to galvanic or faradic currents in tibialis anticus and peronei of left leg on July 31, 1885.
149	M.	54	John.	Dr. Duckworth.	Progressive muscular atrophy.	To test muscles.	Electrical reactions impaired in proportion to wasting. No R.D.
150	M.	24	Abernethy.	Mr. Savory.	Hypochondriasis.	To test electrical reactions.	Normal.
151	M.	27	Pitcairn.	Mr. Walsham.	Sciatica.	For treatment.	Galvanised. Cured.
152	M.	11	Ophthalmic.	Mr. Power.	Nævus of conjunctiva.	Electrolysis.	... ...
153	F.	60	Ophthalmic.	Mr. Power.	Extirpation of eye.	Galvano-cautery.	... ...
154	M.	8	Ophthalmic.	Mr. Power.	Removal of cornea.	By galvano-cautery.	... ...
155	M.	29	John.	Dr. Duckworth.	Lateral sclerosis.	To test muscles.	Electrical reactions normal. Strong currents produced violent tremors of limbs.
156	F.	24	Stanley.	Mr. Willett.	Contraction of fingers of right hand. Hysteria.	For testing muscles of affected hand and treatment.	Very little improvement.
157	M.	61	Abernethy.	Mr. Savory.	Pain along course of sciatic nerve. Paraplegia.	To test muscles.	Died with carcinomatous tumour in pelvis.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
158	F.	60	Elizabeth.	Dr. Duckworth.	Sciatica (right); third attack.	Galvanised. Was also treated with chloride of ammonium.	Discharged cured.
159	F.	29	President.	Mr. Willett.	Sciatica.	Galvanised.	Cured.
160	F.	25	Mary.	Dr. Legg.	Hysteria.	For testing.	Electrical reactions normal. Impaired sensation on right side.
161	M.	52	Harley.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
162	M.	53	Darker.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
163	M.	27	Matthew.	Dr. Brunton.	Lateral sclerosis after injury to back.	To test muscles.	Electrical reactions normal.
164	F.	6 wks	Sitwell.	Mr. B. Clarke.	Nævus on end of nose.	Electrolysis.	... ...
165	M.	70	Darker.	Mr. B. Clarke.	Enlarged prostate.	Electrolysis performed after an incision had been made into neck of bladder as for a median lithotomy.	Death.
166	M.	31	Harley.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
167	M.	56	Mark.	Dr. Hensley.	Paraplegia.	To test muscles.	Electrical reactions normal. Some loss of electro-sensibility.
168	F.	17	Stanley.	Mr. Walsham.	Deformity of left forearm. Hysteria.	To test muscles and for treatment.	All the muscles react normally.
169	F.	6	Stanley.	Mr. Walsham.	Injury to left shoulder-joint two years ago, followed by wasting of muscles.	To be distinguished from infantile paralysis.	Impaired galvanic irritability and faradic contractility in proportion to the wasting.

170	M.	29	Abernethy.	Mr. Marsh.	Injury to left shoulder-joint. Wasting of muscles of upper arm.	To exclude possibility of condition being due to infantile paralysis.	Electrical reactions impaired.
171	F.	19	Stanley.	Mr. Walsham.	Fractured right fore-arm.	To restore action and bulk of muscles.	... ...
172	M.	32	Harley.	Mr. Willett.	Fractured base of skull from fall from a scaffold.	To decide whether the right facial nerve was divided.	Increased galvanic irritability on right side of face, with complete loss of electro-sensibility. Facial nerve was, therefore, implicated in the injury.
173	M.	53	Harley.	Mr. Baker.	Neuralgia of right shoulder for seven years.	For treatment. The brachial plexus had been stretched, with only temporary relief and partial paralysis of arm.	Greatly relieved.
174	M.	35	Rahere.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
175	F.	22	Lawrence.	Mr. Butlin.	Nævus of tongue.	Removed by galvano-cautery.	No bleeding.
176	M.	37	Harley.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
177	F.	38	Faith.	Dr. Brunton.	Hysterical paraplegia.	To test muscles.	Improved.
178	M.	46	Mark.	Dr. Andrew.	Lepra anæsthetica.	... ...	Loss of faradic contractility in the muscles supplied by ulnar nerves. In lower extremities loss of faradic contractility in left tibialis anticus.
179	F.	19	President.	Mr. Walsham.	Congenital absence of sphincter ani.	To test whether there were any contractile muscular fibres about anus.	Internal sphincter or muscular coat of bowel reacts readily. No external sphincter.
180	M.	63	Rahere.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
181	M.	17	John.	Dr. Duckworth.	Malingering. *Res angusta domi.*	To test muscles.	Electrical reactions normal.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Age.	Sex.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
182	F.	26	Lucas.	Mr. Langton.	Division of median nerve.	To test muscles of thumb.	Impaired galvanic irritability showing R. D. (A. C. C. > C. C. C.). Complete loss of faradic contractility.
183	M.	47?	Matthew.	Dr. Church.	Myelitis (chronic).	To test muscles.	Great loss of electro-sensibility. Muscles react well to both currents.
184	M.	50	Pitcairn.	Mr. Walsham.	Thrombosis of brachial artery.	To test muscles of right arm.	All electrical reactions impaired.
185	M.	21	Darker.	Mr. Langton.	Division of ulnar nerve.	To test muscles of hand.	Loss of faradic contractility in muscles supplied by ulnar nerve.
186	M.	50	Henry.	Mr. Smith.	Injury to brachial plexus (left).	For testing and treatment.	Impaired electrical reactions in muscles of left arm. No R. D.
187	M.	34	Henry.	Mr. Smith.	Great pain under left scapula for five years.	For treatment.	Nov. 1885. Returned with same pain in Aug. 1886. Again treated by galvanism. Discharged cured.
188	M.	8	Darker.	Mr. Langton.	Excision of right elbow-joint. Sept. 1885.	Nov. 1885. To faradise wasted and disused muscles.	... ...
189	M.	24	John.	Dr. Duckworth.	Inability to use right arm in his trade. Is a hammer-man. Enormously hypertrophied muscles of both arms.	To test muscles.	Galvanic irritability increased in right arm, otherwise reactions normal.

190	M.	35	John.	Dr. Duckworth.	Fibrillary twitchings in muscles of calves, which are diminished in size and flabby.	To test muscles.	Electrical reactions normal.
191	M.	5	Elizabeth.	Dr. Duckworth.	Diphtheritic paralysis.	To test muscles.	Electrical reactions normal.
192	M.	36	Pitcairn.	Mr. Willett.	Division of ulnar nerve.	To test muscles.	Loss of electrical reactions in muscles supplied by ulnar nerve.
193	F.	35	Lawrence.	Mr. Baker.	Facial paralysis after removal of a parotid tumour.	To test left side of face.	Loss of faradic contractility. Some muscles showing R. D. Impaired electro-sensibility.
194	M.	21	Harley.	Mr. Baker.	Double talipes - equinovarus.	To test muscles.	Impaired electrical reactions, most marked in peronei muscles. No R. D.
195	M.	26	Pitcairn.	Mr. Willett.	Injury to spine.	To test muscles.	Electrical reactions impaired.
196	M.	40	Rahere.	Mr. Baker.	Partial paralysis of arm following dislocation of the shoulder.	To test muscles.	Electrical reactions impaired in affected limb.
197	F.	27	Martha.	Dr. Duncan.	Phlegmasia alba dolens.	To test muscles.	Marked impairment of electrical excitability in muscles of affected leg, due to a great extent to increased resistance.
198	F.	7 mos.	Stanley.	Mr. Walsham.	Nævus on right cheek.	Electrolysis.	... ...
199	M.	37	Pitcairn.	Mr. Willett.	Paralysis of arm following dislocation of the shoulder unreduced for twelve hours.	To test muscles.	Electrical reactions impaired.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
200	M.	62	Henry.	Mr. Butlin.	Lepra anæsthetica.	To test the reaction of muscles of limbs.	Impaired electrical reactions with marked loss of sensation.
201	M.	23	Henry.	Mr. Smith.	Talipes-equino-varus, right foot.	To test muscles.	Electrical reactions normal (probably congenital).
202	M.	35	Mark.	Dr. Andrew.	Disseminated sclerosis.	To test muscles.	Electrical reactions normal.
203	F.	36	Elizabeth.	Dr. Duckworth.	Peripheral neuritis of legs and thighs (alcoholic?).	To test muscles.	Impaired electrical reactions. Marked loss of sensation. Pain in limbs. Loss of reflexes.
204	M.	18	Pitcairn.	Mr. Willett.	Division of median and ulnar nerves, left hand.	To test muscles.	Loss of electrical reactions in muscles of hand supplied by injured nerve.
205	M.	47	Matthew.	Dr. Church.	Lateral sclerosis.	To test muscles.	Electro-excitability increased; reactions normal.
206	M.	37	Henry.	Mr. Smith.	Old injury to shoulder.	To test muscles and for treatment.	... ...
207	M.	43	Kenton.	Mr. Marsh.	Fistula in perineo.	Sinus treated with galvano-cautery.	... ...
208	M.	23	John.	Dr. Duckworth.	Pemphigus diutinus.	To examine electrical reactions of muscles.	Electrical reactions normal. There is marked loss of sensation in the limbs, increased towards the periphery.
209	F.	48	Elizabeth.	Dr. Duckworth.	Intracranial tumour.	To test muscles.	Electrical reactions normal.
210	F.	6	Lucas.	Mr. Savory.	Weakness of right leg.	To test muscles.	Impaired electrical reactions in right leg.

211	M.	37	Darker.	Mr. Bruce Clarke.	Stricture of urethra.	Electrolysis.	...	...
212	F.	49	Sitwell.	Mr. Baker.	Recurrent scirrhus of breast.	Electrolysis of nodular growths in skin.	...	...
213	F.	31	President.	Mr. Willett.	Disease and deformity of left lower limb.	To test reactions.	Electrical reactions much impaired, especially of thigh.	
214	M.	62	Harley.	Mr. B. Clarke.	Enlarged prostate (not a bad case).	Electrolysis.	Cured.	
215	F.	25	Stanley.	Mr. Marsh.	Painful stump.	Galvanised once.	Not relieved.	
216	F.	49	Martha.	Dr. Duncan.	Removal of vulva and clitoris.	Galvano-cautery.	...	...
217	M.	39	Rahere.	Mr. B. Clarke.	Stricture of urethra and perineal fistula.	Electrolysis.	...	...
218	M.	44	Darker.	Mr. Langton.	Division of left median nerve.	For testing and treatment.	Muscles of left thumb show the reaction of degeneration (A.C.C.>C.C.C.), with loss of faradic contractility.	
219	F.	33	Martha.	Dr. Duncan.	Swelling of both legs after confinement.	To test muscles.	Impaired electrical reactions, due chiefly to increased resistance.	
220	F.	26	Elizabeth.	Dr. Duckworth.	Facial paralysis, right, following erysipelas of head.	To test muscles.	The right side of the face reacts more readily than the left.	
221	M.	33	Darker.	Mr. Langton.	Division of ulnar nerve (left).	To test muscles.	Loss of electrical reactions in muscles supplied by ulnar nerve in left hand.	
222	F.	35	Mary.	Dr. Gee.	Chronic rheumatoid arthritis.	Galvanic baths.	Very greatly improved.	

Table of In-patient Cases—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
223	F.	18	Lucas.	Mr. Langton.	Division of ulnar nerve (right).	To test muscles.	Muscles of hypothenar eminence give R. D. Absence of all electrical reactions in other muscles supplied by ulnar nerve in right hand.
224	F.	34	Stanley.	Mr. Savory.	Division of ulnar nerve (right).	To test muscles.	Loss of all electrical reactions in muscles supplied by ulnar n.
225	M.	40	Abernethy.	Mr. Cumberbatch	Facial paralysis (right), from necrosis of temporal bone.	To test muscles.	Muscles of right side of face show R. D. Loss of faradic contractility.
226	F.	44	Martha.	Dr. Duncan.	Swelling and ulceration of left labium with anæsthesia consequent upon injury to lesser sciatic nerve.	To test muscles and for treatment.	Anæsthesia extends down the back of thigh almost to heel.
227	M.	57	John.	Dr. Duckworth.	Progressive muscular atrophy.	To test muscles.	Electrical reactions normal.
228	F.	14	Sitwell.	Mr. Baker.	Division of median nerve.	To test muscles.	Muscles of ball of thumb have lost their faradic contractility and show the reaction of degeneration (A.C.C.> C. C.C.)
229	M.	64	Darker.	Mr. Langton.	Injury to spinal cord.	To test muscles.	... ...
230	M.	27	Colston.	Mr. Langton.	Injury to left shoulder.	To test muscles and for treatment.	Impaired electrical reactions in deltoid and biceps.

231	M.	4	President.	Mr. Walsham.	Talipes-equino-varus.	To restore bulk of muscles after operation.	Impaired faradic contractility; react normally to galvanism.
232	M.	52	Mark.	Dr. Andrew.	Pain in right side.	For treatment.	Improved.
233	M.	59	Luke.	Dr. Gee.	Paralysis of sphincter ani from distension, hand having been passed into rectum.	To test condition of sphincter and for treatment.	Impaired electrical reactions. After faradisation recovered complete control over motions.
234	F.	18	Faith.	Dr. Church.	Chronic myelitis.	To test muscles of legs.	Electrical reactions normal.
235	M.	36	Harley.	Mr. B. Clarke.	Cystitis.	For treatment.	Improved.
236	M.	18	John.	Sir D. Duckworth	Lateral sclerosis.	To test muscles.	Galvanic irritability increased; reactions otherwise normal.
237	M.	22	Kenton.	Mr. Marsh.	Contraction and wasting of lower limbs after rheumatic fever.	To test muscles.	Impaired electrical reactions.
238	F.	27	Mary.	Dr. Gee.	Coccygodynia.	For treatment. Galvanic baths.	
239	M.	1	President.	Mr. Smith.	Multiple nævi.	One pendulous nævus removed by galvano-cautery. Two others on scalp cured by electrolysis.	
240	M.	55	Henry.	Mr. Butlin.	Fall from a scaffold on to his head, followed by a condition of general paralysis and numbness all over his body, with pain in lumbar region.	For testing and treatment.	Reactions to galvanic current normal. There appears to be some slight loss of faradic contractility.
241	F.	54	Hope.	Dr. Andrew.	Rheumatoid arthritis.	Galvanic bath.	Greatly improved.
242	M.	56	Harley.	Mr. Baker.	Paralysis of right arm following dislocated shoulder.	For testing and treatment.	Electrical reactions greatly impaired.

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
243	M.	50	Mark.	Dr. Andrew.	Polio-myelitis, subacute (anterior cornua).	To test muscles and for treatment.	Electrical reactions normal, but impaired in proportion to the wasting.
244	M.	23	Mark.	Dr. Andrew.	Syphilitic disease of cord.	To test muscles.	Electrical reactions normal.
245	F.	25	Hope.	Dr. Andrew.	Paraplegia (during pregnancy).	To test muscles.	Complete loss of faradic contractility and sensibility. Greatly impaired galvanic irritability.
246	F.	...	Casualty.	Mr. Smith.	Left hemiplegia (slight).	To test muscles.	Electrical reactions normal.
247	M.	$2\frac{3}{4}$	President.	Mr. Willett.	Infantile paralysis (slight).	To test muscles and for treatment.	Loss of faradic contractility in affected muscles with increased galvanic irritability. Has greatly improved.
248	M.	38	Darker.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	Cured.
249	M.	57	Harley.	Mr. Willett.	Painful stump, left forearm.	Treated with an electric arm-bath.	Pain remained at end of stump, but not along course of nerves.
250	F.	29	Faith.	Dr. Church.	Syphilitic disease of cord (?).	To test muscles of limbs.	All the muscles of the thighs and legs react normally except the tibialis anticus, which shows R. D. Loss of faradic contractility in extensor muscles of both fore-arms.
251	F.	1	Sitwell.	Mr. Baker.	Nævus.	Electrolysed.	... ...

252	F.	21	Hope.	Dr. Andrew.	Adult spinal paralysis. Very extensive; every limb involved.	To test muscles.	Gave the usual reactions of infantile paralysis, except that there was no marked increase of galvanic irritability at any time.
253	F.	16	President.	Mr. Willett.	Hysteria (paraplegia).	To test muscles.	Muscles react very readily to both currents.
254	M.	$3\frac{1}{2}$	Elizabeth.	Sir D. Duckworth	Diphtheritic paralysis.	Admitted from the Electrical Department.	... ...
255	F.	31	President.	Mr. Smith.	Hysteria (torticollis).	For treatment. Faradised.	Cured.
256	M.	28	John.	Sir D. Duckworth	Lead-palsy.	To test muscles.	Marked loss of faradic contractility in muscles of both forearms. Galvanic irritability impaired (C.C.C.>A.C.C.)
257	F.	32	Elizabeth.	Sir D. Duckworth	Hysteria.	To test muscles.	Electrical reactions normal.
258	M.	40	Pitcairn.	Mr. Walsham.	Paralysis following concussion of brain and spinal cord.	To test muscles.	Three days after the accident there was no change in the electrical reactions. Later on, the reactions were impaired. The man recovered.
259	M.	52	Rahere.	Mr. B. Clarke.	Stricture of urethra.	Electrolysis.	... ...
260	F.	15 mos.	Elizabeth.	Sir D. Duckworth	Infantile paralysis.	To test muscles and for treatment.	... ...
261	M.	33	Darker.	Mr. Langton.	Old injury to left arm. Losing strength in it.	To test muscles.	... ...
262	M.	60	Rahere.	Mr. B. Clarke.	Dislocated right shoulder, followed by partial paralysis of arm.	For treatment.	... ...

TABLE OF IN-PATIENT CASES—*continued.*

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Electrical Reactions, Result, and Remarks.
263	M.	5½	Stanley.	Mr. Willett.	Facial paralysis.	To test muscles and for treatment.	Loss of faradic contractility.
264	M.	37	Colston.	Mr. Langton.	Sciatica (left).	Galvanised.	Cured.
265	M.	17	Darker.	Mr. Baker.	Injury to elbow; loss of power in arm.	To test muscles.	... ...
266	M.	38	John.	Sir D. Duckworth	Locomotor ataxy.	To test muscles.	Normal.
267	M.	52	John.	Sir D. Duckworth	Sciatica.	Galvanised.	Cured.
268	M.	42	Luke.	Dr. Gee.	Lead-palsy.	To examine muscles.	Was in the Hospital in Nov. 1882. No. 3 in my former paper.
269	F.	32	Martha.	Dr. Duncan.	Hypertrophy of anterior lip of *os uteri*.	Removed by galvano-cautery.	... ...

The 876 *bonâ fide* out-patients have been entered in the case books under the following heads:—

Abrasion of cervix uteri, treated by electrolysis 4
Amenorrhœa 1
Anæsthesia 2
Anchylosis of shoulder-joint, 1; of hip, 1 2
Anosmia 1
Aphonia, hysterical 2
Atony of bladder 3
Atrophy of optic disc . . . 1
Brow ague 1
Cephalalgia 1
Cerebral tumour 3
Chorea 4
Choreic hemiplegia 2
Colles's fracture, weakness after . 3
Concussion of brain and spinal cord 1
Congenital absence of lower part of trapezius 1
of serratus magnus . . . 1
Cystitis 2
Deafness 1
Diseased elbow-joint, 3; ankle joint, 1 4
Disseminated sclerosis . . . 3
Division of nerves:—
Division of median nerve . . 14
of median and ulnar . . 1
of musculo-spiral . . . 1
of posterior-interosseous . . 1
of ulnar 13
Dropped wrist or wrists (cause not clear) 10
(See also under lead-palsy and paralysis from pressure.)
Duchenne's paralysis . . . 1
Enuresis 28
Exophthalmic goitre . . . 1
Flat-foot 1
Fibroid tumour of the uterus . . 1
Functional spasm 11
General paralysis of the insane . 1
Gleet 2
Gout 1
Gunshot wound of left wrist . . 1
Hemiplegia, right 26
left 16
Hypochondriasis 2
Hysteria 14
Idiots 2
Injuries to right upper extremity . 16
to left upper extremity . . 9
to right leg, 2; left leg, 2 . . 4
to shoulder 12
to spine 1
Keloid 1
Lateral sclerosis 8
Lead-palsy 29
Lead-palsy (?) 2
Loose cartilage in knee-joint . . 1
Lumbago 3
Mercurial tremors 1
Metritis (chronic) 1
Myelitis 1
Nævi (for treatment by electrolysis or removal by galvano-cautery) . 55
Nerve-stretching 1
Neuralgia, 5; of right arm, 4 . . 9
Neurasthenia 1
Night-palsy 3
Numbness of right upper extremity 3
left upper extremity . . . 3
Numbness in lower extremities . 1
Ovaritis 1
Pain in right arm, 3; in left arm and shoulder, 5 8
in back 2
about hip, 1; left thigh, 1 . . 2
in gluteal region 1
in perineum 1
Painful stump 2
Paralysis, alcoholic 7
of right upper extremity . . 3
of left upper extremity . . 3
of deltoid 17
of right leg 1
diphtheritic 2
Paralysis due to employment—
Needlewoman 1
Watchmaker 1
Writer's cramp 6
Paralysis, facial, right . . . 33
Paralysis, facial, left . . . 23
from diseases of vertebræ . . 1
Paralysis from pressure . . . 1
from crutches 13
from dislocated head of humerus 4
from sleeping on arm . . . 33
Paralysis hysterical 4
infantile 100
of certain muscles after specific fevers:—
of measles 1
of small-pox 2
of typhoid 3
Paresis of external rectus . . 2
general of extremities . . . 1
of right upper extremity, 23; of left, 14 37
of right lower limb, 10; of left, 20 30
Perforating ulcer 1
Peripheral neuritis 17
Phlegmasia alba dolens . . . 2
Polypus (mucous) removed from back of mouth 1
Port-wine stain on face . . . 1
Progressive muscular atrophy . 17
Prostatic discharge 1
Rheumatic arthritis . . . 4
elbow 2
inflammation of musculo-spiral nerve 1
inflammation of sheath of biceps 1
hip 2
shoulder 6

Rheumatic wrist	1	Spermatorrhœa	1
Rheumatism (chronic)	2	Spinal caries	1
gonorrhœal	2	Stammering	6
Rickets	3	Stenosis of lachrymal canals	2
Ruptured tendo Achillis	1	Stricture of urethra	12
Sciatica, right	30	Swelling of hands	1
left	21	Syphilitic disease of cord, 1; of brain, 1	2
Scissor-legged contraction	1	Talipes, different forms	13
Spastic choreic hemiplegia	1	Tic-douloureux	2
condition of muscles of face	2	Torticollis	2
hemiplegia (congenital)	2	Tremors of different limbs	5
paraplegia (congenital)	1	Not classified	5

The affections in which electricity has been found of the most signal benefit, and perhaps preferable to all other modes of treatment, are sciatica, stricture, chronic rheumatic arthritis, and, used as galvano-cautery, for the removal of growths and diseased tissues from parts difficult of access. I hope it has also in several cases proved to be an aid to diagnosis.

The greatest difficulty is experienced in keeping the batteries of the Hospital in good working order. This no doubt will always be the case when they are used by so many different hands, and some of them possessed of no special knowledge of the construction of electrical instruments.

The clinical clerk or dresser of each patient for whom a battery is used ought to be held responsible for putting the battery out of action, and for drying the electrodes and packing them away after the application is finished; but these details are usually left to the sisters and nurses. There is a great difference shown in the wards with regard to the batteries being in or out of order. This does not depend on the batteries, but on the additional care taken of them in some wards as compared with others.

A systematic visitation is made of all the wards once a week, and the sisters and junior members of the staff are asked to report at once and send to the Electrical Department any battery that is out of order. Often such batteries as the Stöhrer's and small bi-chromate of potash faradic batteries are found with the zincs left immersed in the exciting fluid. Leclanché batteries are put away with the electrodes moist and touching each other, and still connected to the battery by the rheophores, sufficient trouble not having been taken to disconnect them. A Leclanché battery thus put away will run down in the course of one night. And, again, batteries are often brought to the Electrical Department as being out of order and not able to be worked, when they are found to be perfectly in order. The insulated part of the wire has been clamped in the binding screw, or a switch which completes the circuit has not been turned, or the screws which regulate the hammer of a faradic battery have been

tampered with, and screwed up so tight that the hammer cannot swing. Sometimes the batteries are carried across the square or the wards at an angle of 45° to the perpendicular, and the fluid from one cell finds its way to the next, and several cells are thus short circuited, and remain so until the liquid between the cells has been dried up. The fault is often not discovered until the next occasion on which the battery is required. We have over and over again been told that a battery will not work when it is in perfect order. I can only enjoin on all those who use batteries to exercise increased and greater care, and to report or send at once to the Electrical Department any battery that they think requires repair. A record is kept of every battery so sent, and by this means it is quite easy to point out the wards in which care is exercised and the reverse. It is a significant fact that my battery, which is kept locked and for my own exclusive use, is not out of order as often as once in six months. There is hardly another battery in the Hospital that does not require something done to it once a fortnight. The same can be said of other and less delicate instruments in the Hospital that are used exclusively by one man, or that are used indiscriminately by many.

The employment of electricity throughout the Hospital has greatly increased, and with it, as a necessary consequence, a corresponding increase has taken place in the number of batteries, and accessories used with them. The workshop attached to the department has been of a substantial advantage, for if all the repairs that are now required were executed away from the Hospital, the cost of the employment of electricity would be much greater than it now is.

I hope in a future paper to refer more fully to some of the cases included in the foregoing lists.

MISCELLANIES.

BY

SAMUEL GEE, M.D.

I.—Chorea Insaniens.

The term *Chorea insaniens* is used by Joseph Bernt, who defines it thus: "Chorea insaniens, quando affecti simul insaniæ specie tentantur, variosque et nonnunquam truculentos, sibi inconsuetos mores, exhibent."[1] Bernt gives to St. Vitus' dance its old extensive meaning, which includes chorea saltatoria or dancing mania; but although in this paper the word Chorea will be used in its newer and narrower sense, yet still the epithet Insaniens will be found fit for some forms of the disease.

That chorea is not a bare disorder of voluntary movements hardly needs to be said: all the animal functions suffer: palsy accompanies and follows chorea; anæsthesia is common; the mind is weakened in all its powers. "Mens et ingenium fiunt infirmiora, et magis puerilia."[2] Emotion is under less control; memory and the power of attention fail; the patient is sometimes subject to hallucinations; and, lastly, downright raving madness may occur.

The patients whose cases will be narrated now were instances of maniacal chorea.[3]

Case I.—*Chorea insaniens, attended by stomatitis, parotides, rheumatoid pycemia, and ending by death.*—Ruth C., aged 14 years. Neither she nor any member of her family was known to have suffered from rheumatism. She had menstruated a few

[1] Monographia Choreæ Sti Viti, Pragæ, 1810, p. 21.

[2] Heberden: Commentar., cap. xx. See the very thorough essay of Marcé: De l'Etat mental dans la Chorée, read April 12, 1859, and published in Mém. de l'Acad. Impér. de Méd., vol. xxiv.

[3] For most of the notes I am indebted to Mr. Arnold Lyndon, who copied them out of the ward-books.

times. Chorea began on July 30, 1882: it affected the whole body severely by the time she was admitted to the Hospital on August 18. From the first there was much difficulty in feeding her: her bowels were obstinately constipated. On September 1 the chorea was worse than before: the girl was very restless, and needed continual restraint from throwing herself out of bed; she kept gnashing her teeth and shrieking. She got no sleep: sometimes she could not swallow: she did not speak, but she knew what was said to her. This state of things lasted for a week, and all this time the temperature was natural. On September 7 she became much quieter. Next day the temperature rose to 103.6°, and henceforward she was continuously febrile. At the same time a rheumatoid affection of all the large joints occurred, together with ulceration on both sides of the tongue and parotid swellings: there were no bedsores at this or any other time. On September 10 the chorea was much less; she could put out her tongue and say many words. On September 12 noisy raving recurred; she did not sleep: ulceration of mouth and pseudo-rheumatism continued: parotides less: no signs of disease of heart. This renewed delirium was the harbinger of death, which happened next day. At the post-mortem examination (for the notes of which I am indebted to Dr. Oswald Browne) suppuration was found to have occurred within the tendon-sheaths of several muscles, *e.g.*, the common extensor of the fingers, and extensors of the thumb, tibialis anticus, sartorius, gracilis, and semitendinosus on both sides of the body. In both parotids there was sanious pus. Both mitral cusps had a fringe of small beads and were somewhat puckered. The joints which were cut into, and all the other organs, were healthy.

Case II.—*Chorea insaniens, parotides; recovery.*—Anne D., aged 15 years. Eight years ago she had chorea for two months: she never had rheumatism. The present attack of chorea began five weeks ago, and gradually became worse. She menstruated a week ago. On admission (August 9, 1883), and for some days afterwards, she was very noisy and restless: her elbows, knees, and chin were reddened by constant rubbing: she got hardly any sleep. She was so troublesome to the other patients by her continual shouting day and night, that she was removed to a room apart, and then she became quieter. Her temperature, which at first was natural, rose to 103° on the 15th: her mouth was dry. August 16: a parotid swelling on the left side: choreic movements were less: she lay with eyes closed, spoke not at all, and passed her evacuations into the bed. Next day a parotid swelling appeared on the right side; that on the left side was

less. August 19: parotides smaller on both sides. From August 21 she slowly mended, and was sent out on October 5.

Case III.—*Chorea insaniens; recovery.*—Alice G., aged 17 years. She never had rheumatism. Chorea began on November 19; on the 22d it was highly marked, and affected the whole body: the heart was unaffected. On the 24th the movements were very violent, mind was deranged, and sleep broken. In the course of a few days she became quieter, but was left in a silly idiotic state: she hardly ever spoke, and seemed not to understand what was said to her. She had been taking chloral. On December 15 a rash appeared, first on the face, breast, extensor surfaces of fore-arms and legs; afterwards on the whole body except the forehead; the colour scarlet, in patches of corymbose or confluent papules. The rash disappeared in seven days. On December 20 she was more rational, and the movements were slight. However, recovery of full understanding was slow: for some weeks after the movements had ceased, she hardly ever spoke, and had a wild and evil look. By the end of January, and not much earlier, she was able to walk and to feed and dress herself. On February 12 she was discharged. At the end of March recovery was complete.

Case IV.—*Chorea insaniens; pregnancy; recovery.*—Sophia B., aged 19 years, married, with one child fourteen months old. No rheumatic tendency known in family: a brother had chorea slightly. The patient had a former attack of chorea at eighteen years of age. She had not menstruated since June 24; in fact, she was pregnant. Her present chorea began on September 15. The heart was unaffected: the temperature throughout the attack never rose above 100°, and seldom above normal. The uterus was not felt until October 24. On admission (September 29) the choreic movements were very violent; she had little sleep, and suffered from delirium which amounted to raving madness. On October 4 she became quieter and slept better. On October 9 she was worse, slept badly; movements very violent; she was very mad and noisy. So she continued to be until October 13, when she began to mend, and henceforward steadily improved: she was discharged quite well on December 19. She was delivered in due time; both she and the baby, seen some months afterwards, seemed to be quite well.

Case V.—*Chorea insaniens; mania with hallucinations; insanity continued after choreic movements ceased; recovery.*—Minnie S., aged 15 years. Never had rheumatism: menses

began at fourteen years. Chorea began early in December, and slowly became worse: she often shed tears without sufficient reason. January 1: chorea much worse, speech almost unintelligible. January 4: put into padded bed on account of restlessness: girl very noisy. Heart and temperature natural, and were so throughout. January 8: more violent and noisy; tried to bite and scratch: bad sleep. January 14: still more delirious: seemed to see apparitions: said that everything she took was blood. Now the chorea began to mend, but the madness increased. January 29: chorea very slight. She was ever talking, and her articulation was good: she often shrieked as if frightened at something. She seldom knew who the people around her were; she spoke to them as though they were her relatives. She saw phantoms, to which she spoke. She fancied she saw black cats and the like falling upon her: all around her there seemed to be blood. She refused to eat bread and butter, thinking it poisonous. In all likelihood there were hallucinations of smell also. She was very evil-disposed, and tried to bite and hurt others. Her sleep was broken. After this time the choreic movements quite ceased; but the insanity continuing, she was sent to a lunatic asylum on March 31. There she stayed until July 30, when, having recovered, she was discharged. Next day she came to the Hospital, and seemed quite well: no signs of heart-disease.

Case VI.—A young married woman was admitted for chorea and delirium: the choreal movements passed off, but she was left insane, and therefore was sent to a lunatic asylum. What became of her afterwards is unknown.

Case VII.—*Chorea insaniens in a lad; recovery.*—John C., aged 16 years. He had had many attacks of rheumatism, severe or slight, since he was six years old. The first and second attacks of rheumatic fever were each followed by chorea lasting two or three months. He had a third, but slight, attack of chorea five months ago. Four months ago the chorea came on again and continued. On admission (January 2), the choreal movements were very violent at times, and affected the whole body. His mind was weak, memory bad, and look stupid; he could not talk; he was easily moved to tears. Sometimes he was very wild, shouted and made much noise. He seemed to have hallucinations. He slept badly. His heart was enlarged, and there was a systolic apex-murmur. The temperature could not be taken often, but was most likely natural. This state continued until January 20, when he began to mend. On

February 1 there were only slight choreic movements of the fingers: he slept better, talked more, and was a little more intelligent. Henceforward he slowly mended, and was sent to Swanley on March 26.

Remarks.—Reviewing these cases, the following particulars may be noted. Six of the patients were young women, one was a young man; their ages from 14 to 19 years (of the sixth case the age is unknown). In younger persons, how violent soever the movements be, chorea seldom causes more than feeble-mindedness; in older persons chorea is apt to be still more strictly a disorder of voluntary motion only.[1] All the young women had menstruated. One was pregnant: she made a good recovery, and the chorea seemed to have done no harm to her or to her baby. It is remarkable that pregnant young women suffering from severe chorea should not miscarry. Only one of the patients died: her chorea was attended by parotides and rheumatoid pyæmia. So large a proportion of recoveries was doubtless due, in great part, to the skill and devotion with which the patients were nursed; whereof no other proof is needful than the fact that not one had a bedsore on any part of the body. To prevent bedsores, to keep the patients clean, and to feed them are the most important parts of treatment. The drugs employed were aperient or hypnotic, according to circumstances. The hypnotics used were chloral, cannabis indica, and morphia. For delirium of any kind cannabis indica is the safest hypnotic: it should be given in full and frequent doses; and if, nevertheless, sleep follow not, one very small dose of a more decided narcotic, such as morphia, will be sufficient.

There seems to be no special connection between chorea insaniens and rheumatism. Five of the patients had never suffered from rheumatism, and in one case only was the chorea actually attended thereby. One patient only had any physical signs of disease of the heart.

Lastly, the occurrence of parotides in two cases is noteworthy. In chorea, as in other diseases, parotides are dependent upon excessive dryness of the mouth and stomatitis.

II.—Menstrual Fever.

When seeming menstruation is attended by fever, it is always well to remember that the uterine hæmorrhage may be no more than part of a general disposition to bleed. Small-pox some-

[1] See two cases of this kind in St. Bartholomew's Hospital Reports, vol. xv. p. 193, and vol. xvii. p. 285.

times brings about a fatal hæmorrhagic diathesis of this kind; but true menstruation, albeit profuse, occurring during small-pox is a much less serious prognostic. Sydenham speaks of this: "*Fluxus Mensium* fœminis hoc morbo laborantibus haud infrequens accidit. Non alia de causa periclitantur fœminæ, nisi quod sanguis ab immodico morbi calore plus justo attenuatus, quâ data porta ruat, naturæ ductus sequens." He gives the case of a noble lady who "tertio die ab eruptione, ita largo *Mensium profluvio*, tempore illis non debito, correpta est, ut astantes mulieres eam jam abortivisse suspicarentur;" yet she recovered.[1] Menstruation seldom concurs with scarlet fever: the two or three cases of this combination to which the author has been witness have died; yet the menses seemed to have little to do with the fatal end. A young woman began to menstruate on the third day of measles, and before the rash appeared: she made a good recovery. During the first week of typhoid fever menstruation is not uncommon, and it often comes on one or two weeks before the proper time. No harm follows; but it is otherwise when the menses appear late in the disease; they render recovery less likely than it was before. Acute inflammations of the lower belly, especially peritonitis, are wont to bring the menses on out of due time.

Menstruation alone is sometimes preceded, attended, or followed by fever which lasts a few days. It may be termed menstrual fever; Trousseau calls it menorrhagic fever.[2] He narrates the case of a young woman, 17 years old, who had lived in Paris for four months only, and who, like most new-comers, had not menstruated. For six days before she was admitted into Hôtel Dieu, she had suffered from fever, headache, giddiness, sleeplessness, nose-bleeding, bad appetite, foul tongue, and diarrhœa. Trousseau suspected typhoid fever; but next day the menses appeared, the fever fell, and two days afterwards the girl was well.

1. *Fever before menstruation.*—Jane G., aged 32 years, had been suckling for twelve months, when (on June 18) she shivered and her head ached. Next day she was admitted into the Hospital; her morning and evening temperatures were 103.4° and 102°. June 20: 99° and 100°; the menses appeared. Next day she was quite well.

2. *Fever during menstruation.*—The same woman was admitted a second time. Her menses appeared on July 28: on

[1] Observationes medicæ, sect. v. cap. iv., "Variolæ Anomalæ."
[2] Clinique médicale, vol. iii. p. 582, 2d edit. 1865.

July 29 she shivered, was giddy, and her head ached. July 29: temperature 103°. July 31 : 101.6°; menses ceased. August 1 : 98.2°; quite well.

3. *Fever after menstruation.*—Fanny H., unmarried, 40 years old. She had been subject all her life to headache at her menstrual periods. The illness for which she was admitted began on April 12, just after the menses: she shivered in the evening, and the body-heat rose to 105° in the armpit. April 14: 102.6° and 103.6°. April 15: 101° and 101°. April 16: 99.4° and 98°. Nothing else but headache. The temperature afterwards was natural, and she went out well.

III.—Menstrual Colic.

It is well known that abdominal pain, having all the characteristics of intestinal colic, often precedes, and sometimes attends, menstruation. Every kind of colic is sometimes accompanied with fever; for instance, in lead-colic the body-heat may rise to 101° or more. Moreover, there is often much tenderness of the abdomen in colic. Given these three things (colic, fever, abdominal tenderness) and peritonitis will be closely simulated, conditions which are sometimes met with in young unmarried women before their menstruation.

Emily B., 17 years old, fell ill on September 9 with shivering, vomiting, and pain in the belly. She had menstruated for the last time a month before: her bowels were opened on September 8. September 10: she shivered again; the pain became worse; she lay with her knees drawn up; the pain was increased by movement or pressure; she vomited: temperatures, morning and evening, 99° and 99.4°. September 11 : she was much the same; vomited again: 100.4° and 101.6°. September 12 : the pain was less; the belly swollen; the bowels acted five times without aperient medicine; no vomiting: 100.4° and 99.8°. September 13 : bowels open twice: 99.2° and 100.6°. The menses began in the evening. September 14 : bowels open once only : 99.8° and 100°. September 15 : 99.4° and 101.4°. September 16: 98.8° and 98.6°. The menses ceased; they had been scanty throughout: she was much better, but still complained of shooting pains in the belly now and then. September 20 : she seemed well, and was free from any pain or tenderness in the belly.

Other instances could be given; in all of them the menstruation was overdue for a few days, and so soon as it appeared the symptoms of peritonitis began to pass away.

IV.—Head-Shaking in Children.

Some infants are affected by a disorder which may be called head-shaking. It is unlike ecclampsia-nutans,[1] and chiefly in respect of the prognosis, for at this age head-shaking is not a very serious complaint.

I. Hilda B., when between five and six months old, became subject to momentary shakings of the head, just such as express dissent. Ten or twelve would occur in an hour. Consciousness was unaffected. She had always kept her thumbs clenched in her fists, but had never shown any signs of laryngismus or of epilepsy. She had been brought up by hand, and was slightly rickety; fontanelle wide, no teeth. The evacuations were white, curdy, and offensive. She had been kept wholly indoors of late. The head-shaking lasted eight months and then ceased: she never had any epileptoid symptoms. She is now twelve years old, a strong and healthy girl.

II. Arthur G. had an attack of "fainting and unconsciousness, lasting for a minute or two," on two occasions, when eight and ten months old, each attack followed by squint for a short time. The squint was wont to recur when the child was tired; the left eye turned outwards. He began to shake his head when fourteen months old, and a few days afterwards nystagmus of both eyes occurred. His mind was natural; he had six teeth only, and was unable to stand, but was not rickety. His brother died of laryngismus. In six or seven weeks both head-shaking and nystagmus went away; the nystagmus lasted longer than the head-shaking; he could stand and walk. When nineteen months old he continued in perfect health.

III. A child, seen when fourteen weeks old, suffered from nystagmus (which began at four weeks of age) and head-shaking (which began at six weeks of age). Nothing more is known about this patient.

Head-shaking in older children is more likely to be epileptoid. A boy, seen when eight years old, had become subject, when seven years old, to fits of head-shaking, each lasting about a quarter of a minute. The attacks were very frequent; during them he could not speak. Seven months before he had a fit of general convulsions with coma, and soon afterwards another. He had not had convulsions in infancy. His head was rickety

[1] Dr. Stephen Mackenzie has narrated the cases of two infants suffering from "nodding spasm." So far as can be judged from a report in the *Lancet* for May 1, 1886 (p. 833), the disorder would seem to differ from both ecclampsia nutans and head-shaking.

in shape; he had a great pigeon-breast, and had been very backward in teething.

But sometimes head-shaking is a form of the half-involuntary movements, twitchings, antics, and grimaces to which children of seven years and older often become subject. In this case there is no fear of epilepsy, and recovery is the rule.

V.—Head-Banging in Children.

This name may be given to a strange disorder which we sometimes meet with in children. The nature of the affection is obscure; perhaps it is a habit: it resembles epilepsy in no other respect than in the tendency to turn over on to the face in bed.

I. Gilbert G., 2½ years old, when seen with Dr. Donald Hood, had been affected thus for two or three months past. At night in bed, both when awake [? half awake] and when sound asleep, he would turn over on to his face and bang his forehead into the pillow. In this way he sometimes behaved nearly all night long; in which case, it need hardly be said, he awoke very weary. He never had convulsions of any kind; indeed, no disorder, past or present, other than the head-banging. A year and a half afterwards this disorder continued when he was not tied down in bed. He had never suffered from nightmare or sleep-walking.[1]

II. George H., 5 years old, a patient of Mr. Patten's, was backward in understanding and speaking, but there were no signs of cretinism. He was a first child, born at full time after a long labour, in which no instruments were used. He had knock-knees and splay feet, but his dentition was very regular. He was very restless, but clean in his habits, and never wet the bed. There were no other signs of disease. He never had convulsions of any kind. Head-banging began when he was 2½ years old (that is to say, as soon as he could hold his body up), and it had continued until the time when he was seen. He used to turn over on to his face and bang his forehead into the pillow about six times in quick succession. This act was seldom repeated in the same night, and seldom occurred oftener than one night in four. He was fast asleep at the time, but was easily roused.

III. Francis C., 2½ years old, had been subject for six months to banging his head on the pillow at night for two or three

[1] Four months after the last note the patient's mother told me that he continued to bang his head at night when not tied down. Even when tied down he sometimes rolls his head from side to side, being asleep. Put to sleep with a younger brother, the latter began to bang his head also: separated, he (the younger child) lost the habit. The first boy continues healthy and cheerful.

hours at a time. He had an inguinal hernia; he had erections of the penis at night; he masturbated, and the foreskin was adherent; otherwise the child seemed well. A year afterwards Mr. J. Lucas Worship wrote this about him: "Whilst he was staying in Sevenoaks, about a month ago, he was the better of knocking his head about; but his nurse said that whilst at home it was as bad as ever. He was a great deal in the meadows here, and slept well from being in the open air so much, which he is unable to get while living at home in a town. He was operated on for his phimosis, which is all right now, and he does not masturbate since then."

VI.—Convulsive Emprosthotonus.

A few instances have been published of a disorder which may be called, for shortness' sake, convulsive emprosthotonus. It consists in an almost incessant convulsion of the muscles which bend the body forwards. This is all: the mind is unaffected: indeed, over and above the local convulsion, there are no signs of disease. Wherefore it is a form of emprosthotonus which must be distinguished from those epileptic seizures which bend the body forward, and which closely resemble ecclampsia nutans. Westphal has narrated the case of a dyer, aged 22 years, who was subject to convulsive movements of the abdominal muscles when he was sitting or lying; when he was standing the movements became more violent; the cutaneous reflexes were increased. After the use of the actual cautery the convulsions went away. The same disorder had affected him for a short time the year before.[1] Dr. Shingleton Smith reports the case of a hysterical woman, 20 years old, who suffered from spasms of the diaphragm and abdominal muscles; the sterno-mastoids likewise were sometimes affected. The disorder lasted seven months and then went away: the treatment consisted of drugs and galvanism, but was not deemed to have been of much use.[2]

I. A boy, 13 years old, seen at Christ's Hospital with Dr. Alder Smith, was affected in this manner for two days only. In all other respects the patient was and had been quite well; nor could anything like a cause for the complaint be discovered.

II. A married woman, 30 years old, epileptic, was under treatment in the Hospital for this convulsion: it went away in two or three weeks.

[1] Quoted in Revue des Sciences médicales, vol. xv. p. 165, from Berliner klinische Wochenschrift for March 3, 1879.

[2] Quoted in Revue des Sciences médicales, vol. xxv. p. 193, from *Brain* for October 1882.

III. Daniel W., aged 25 years, a Welshman, was admitted for the same disorder, which rendered him utterly unable to do his work. Having derived no benefit from hospital treatment, he went to Canada. The convulsions soon left him.

IV. Matthew D., aged 52 years, a Welshman, was struggling, and struck his hand against a man's teeth. He hurt his little finger; it suppurated freely, and four months afterwards it was cut off. The wound healed in two weeks; but from this time forward he was unable to use his right fingers. Five months after the first injury, twitching in the right arm and abdominal convulsion began. He was a stupid man; perhaps his mind was failing. He had an incessant convulsion of the abdominal muscles, which shook the whole body. It were to be wished that the notes concerning the state of the right arm were completer. However, it was somewhat wasted up to the shoulder; the right fingers were semiflexed and fixed in that position; the interossei were wasted; the fingers of the right hand were glossy. Altogether it may be deemed an instance of centripetal neuritis due to injury. Before he left the Hospital the abdominal convulsion had ceased.

VII.—Albuminous Expectoration.

The occurrence of albuminous expectoration during paracentesis of the chest for pleural effusion has been noted much more often in France than in England. For this reason the following case seems to be worthy of publication.

Malformation of right auricle: general dropsy: pleural effusion: paracentesis thrice, attended each time by albuminous expectoration.—W. Jno. L., aged 20 years, was admitted on January 9. He had been ailing for twelve weeks: for three weeks his breathing had been hard and his legs swollen. He was dropsical and sallow: the only physical sign of disease of the heart was a systolic murmur at the left apex: the urine was slightly albuminous throughout his illness. There were signs of a liquid effusion at the base of the left lung. Paracentesis was performed on January 15: 53 oz. of clear serum were drawn off. The operation was followed by a bad cough, which lasted more or less for some hours, and was attended by an abundant expectoration, very viscid, frothy, light orange in colour, and highly albuminous. His distress of breathing was much relieved. On January 29 paracentesis was repeated: 29 oz. of serum drawn off; not much expectoration afterwards. On February 23 paracentesis of the right side was performed. Being forewarned by past experience, the finest cannula was

used, and the pleural liquid was drawn off very slowly; it amounted to 68 oz. of clear serum. Almost immediately the evacuation was commenced he began to expectorate; the sputa came up with cough, but without difficulty, and were more copious when the patient was lying than when he was sitting. In two hours he brought up nearly a quart of sputum. It was viscid, frothy, clear (but with brownish-red sediment), yellowish-green, neutral or slightly alkaline, and of specific gravity 1022. Dr. Vincent Harris examined it further, and reported that it contained a very large quantity of serum-albumen (ascertained by Hoppe-Seyler's process), a distinct quantity of mucin, some pus and blood corpuscles in the deposit and scum. Thus the expectoration seemed to consist of blood serum mixed with small quantities of mucus and pus. The temperature throughout remained natural. His abdomen became very tight from ascites, the dropsy increased, the jugular veins became distended, the dyspnœa increased, and he died on March 10. At the post-mortem examination a large effusion was present in both pleural cavities; the lungs were collapsed. Nothing whatever was found which would seem to show that either lung had been punctured by the trocar. The pericardium was adherent throughout; the heart was not hypertrophied above the orifice of the coronary sinus, and projecting across the auricle from the septum auricularum was a partly muscular shelf which divided the auricle incompletely into two halves, upper and lower; the inferior vena cava entered the auricle just above this shelf. The heart is preserved in the Museum (No. 3592). The valves were all natural. Liver, spleen, and kidneys were congested and indurated.

Since this case was written out for publication, another instance of albuminous expectoration has occurred in the Hospital. Henry T., a man aged 40 years, had noticed glandular swellings in the neck for nine weeks. His voice had been hoarse for six weeks, his breathing bad for four. On admission he was seen to be a well-nourished man, rather blue in the lips; he could not lie down; breathing stridulous; voice hoarse, and frequent short barking cough, sometimes followed by much dyspnœa. All the superficial lymphatic glands were enlarged, especially in the neck and armpits. His feet and legs were dropsical; the urine not albuminous. The physical signs in the chest were these:—Right side, natural. Left side, expansion defective; absolute dulness to percussion below level of third rib; vocal vibration absent; breathing sounds softly bronchial. Heart: percussion dulness over lower two-thirds of sternum, and extending slightly to the right thereof; apex beat

imperceptible; sounds natural. An exploring puncture of the left chest drew off serum. Abdomen somewhat distended; spleen reached down to the navel; liver enlarged, and also reaching as low as navel. Temperature of body natural.

Next day paracentesis of the chest was performed by means of an aspirating bottle, and sixty ounces of clear serum were drawn off; specific gravity 1020, faintly alkaline; became solid with coagulated albumen when heated. Immediately after the operation he seemed doing well; the left side of the chest became resonant down to its base. But in three or four minutes' time he became very blue; clear yellow frothy liquid came out in gushes from his mouth and nose, and in half an hour he was dead from suffocation. The liquid expectorated was of specific gravity 1025, faintly alkaline, and loaded with albumen.

The post-mortem examination showed a great mass of lymphadenoma in the upper part of the anterior mediastinum, reaching from sternum to spine, and surrounding the carotid, subclavian, and innominate arteries, aorta, and trachea. Pericardium was distended with a pint of serum; no sign of inflammation. Heart natural. Small amount of serum in both pleural cavities. Lungs œdematous but fully expanded; no sign of injury. Mesenteric glands enlarged. Liver large, smooth, weighing 100 oz. Spleen soft, dark red, weighing 27 oz. Kidneys natural.[1]

VIII.—Motor Ataxia due to Injury to the Back.

The causes of motor ataxy, as of most diseases, are the least known, yet most important part of the history. Injury to the back would seem to be sometimes a cause; and to the few instances which have been published [2] on behalf of this proposition the following may be added:—

Henry C.,[3] aged 29 years, who was a ship's carpenter, was working close beneath an iron plate weighing 13 cwts. The plate was slung up; some of the suspenders gave way, and he was doubled up under it, chin on to chest, and belly on to legs. He was got out unconscious, and with blood flowing from mouth and nose. The unconsciousness lasted four hours. Two weeks afterwards he was well enough to be discharged from the infirmary whither he had been taken. One month after the

[1] This case occurred during my absence from town; for the notes I am indebted to Dr. W. J. Gow, House-Physician.

[2] Dr. J. A. Ormerod has published a case in St. Bartholomew's Hospital Reports, vol. xvii. p. 49. He has also directed me to a paper, "De l'Ataxie locomotrice dans ses Rapports avec le Traumatisme," by Dr. L. H. Petit: Revue mensuelle de Méd. et de Chir., vol. iii. p. 209. Paris, 1879.

[3] The notes by Mr. W. W. Ewbank.

accident he suddenly became liable to pain in all four limbs, pain shooting down the limbs and coming on in paroxysms, each lasting about ten minutes, and occurring about six times in twenty-four hours. Four months after the accident he began to suffer from a burning pain, which began in the lower part of the belly and spread upwards to the chest; the pain came on about every three days, lasted half an hour, and was followed by vomiting. The man's health up to the time of the accident had always been good; he denied that he had ever been affected with syphilis, nor were there any signs thereof.

He was a healthy-looking, well-nourished man. No loss of muscular power in arms or legs; no wasting. His gait was quite ataxic; he could not stand when his eyes were shut. He could not write; when he tried to do so, his fingers behaved just as they do in some cases of writer's cramp; the pen flew out so soon as he began to grasp it firmly, the thumb riding over the forefinger. The patellar reflexes were absent. He had perfect use of bladder and rectum. He had partial loss of sensation on the palms of the hands and front of the fingers, not on the back of the hands or on the arms. The distribution of sensibility in the lower limbs was exactly similar. He had the shooting pains and gastric crises described above. The pupils acted naturally to light and accommodation. The electric reactions of the muscles were natural. In all other respects the condition was that of perfect health. Whilst he was in the Hospital there was no change in his state.

The reader will have remarked that the symptoms of this patient differed from those of ordinary motor ataxia, and specially in these particulars. First, the arms suffered no less than the legs; and next, the cranial nerves were not affected. In other words, the symptoms may be explained by supposing a lesion of the spinal cord alone, and throughout the whole length thereof.

ON

INSANITY WITH SEXUAL COMPLICATIONS.

BY

T. CLAYE SHAW, M.D.

The influence of the sexual organs in women on attacks of insanity is at times easily recognised—occasionally obscure. It by no means follows that because a patient has delusions of a sexual character she has therefore disease, or even disarranged function, of the sexual system; and, on the other hand, there may be extensive disease of the uterus and ovaries without any sexual hallucination or delusion in women otherwise insane.

It should be stated that the difficulty of diagnosing disease of the uterus and ovaries in the insane is much greater than many would suppose. To begin with, many women are too violent to be examined, others it is not advisable to examine because of the fear of setting up delusions of a sexual nature. This well-founded apprehension shows that delusions of a sexual nature are often purely mental, and have no relation to the organs which are referred to; but it is not meant to infer that the sexual organs are never the cause of sexual delusions; this they may be, as well as of delusions of a nature quite distinct. I recently had as a patient here a Frenchwoman with hard uterine cancer, but her delusions had reference to torture by wolves and other animals, and there was, after the disease was fully developed, no connection either between it and her delusions, although in the earlier stages of it she was very indecent in her actions, and had delusions relating to marriage. Another woman, who has a large ovarian tumour, probably malignant in character, has delusions that she is indecently tampered with every night by men. But lascivious habits and delusions are not always connected with the sexual organs; for in old women, where these functions have been long in abeyance, the greatest obscenity both in acts and language may be noticed.

The question is, Can we say with certainty that there is some affection of the sexual organs present in every case of insanity where there is a regular recurrence of symptoms characterised by sexual acts or delusions? I think that we cannot always say so, although in many cases there is undoubtedly some direct connection to be traced. All who practise in asylums are familiar with the cases of impulsive insanity attended with amenorrhœa or dysmenorrhœa, and with the cessation of the symptoms when the normal function is re-established; but even here the connection between the two as to cause and effect is not quite certain, because a feeble state of bodily health may be the cause of the two sets of symptoms, and the improvement of the debilitated habit begins the cure of the insanity and of the suppressed function. More reliable instances are to be found in cases such as the following:—A woman, aged 28 years, has monthly attacks of recurrent mania, coming on just before the period, and ceasing after the stoppage of the latter. During this excited condition her actions are of the most sexual kind, but when in her normal state she is a most correct person in her actions. It is difficult here not to believe in the relation between the two groups of symptoms. The connection between the occurrence of the periods and attacks of suicidal or homicidal impulse is very common, whether as cause and effect or not. One of the most troublesome patients here in this way is a young girl, aged 18, who suffers from very imperfectly developed periods, and who every month has aggravated suicidal attacks, subsiding when the period is over.

The practical bearing of the subject is very important, because if the connection between the two sets of symptoms is a causal one, much may be done to relieve or cure the insanity by surgical or medical interference with the uterine or ovarian irregularities. In the case of Mrs. C. above quoted, would it be right to remove the ovaries? If the monthly recurrent excitement goes on, a condition of dementia must necessarily at last ensue; but if the connection is only accidental, and not causal, then it is not right to expose a young married woman to this dangerous operation. Again, if the young girl's recurrent suicidal state is dependent on irregular menstruation, it is necessary to resort to uterine therapeutics. The question is difficult of solution—What do we learn from the influence of uterine affections in persons not insane? Malignant disease of the genital organs, prolapsus, continuous discharge, &c., may go on for a long time unaccompanied by any perverted sexual ideas or irregular demonstration, that is, without any mental affection. True, there is said to be an alteration in the

temper and habits, and a disposition to hysterical developments at the times of the period in most women; but this is only true in people who are of nervous temperament, or who suffer from constitutional debility. It would seem, then, that uterine affections do not cause insanity, unless there is already a predisposition to it; that there is no relation between the two of a very constant nature, and that therefore remedial uterine therapeutics, although of the greatest advantage perhaps in improving the general health of the patient, would have no effect upon the insanity. Exception to this general statement might be made in cases where profuse cervical leucorrhœa, flexion, or version of the uterus caused a conditionary melancholia, cured by the successful treatment of the local affection; but this class of cases scarcely amounts to the degree of insanity necessitating asylum treatment, although, of course, actual delusions and destructive impulses might be occasioned by the constitutional weakness brought on by pain, want of sleep, imperfect nutrition, &c., set up by the local lesion. Again, there are cases of true delusional insanity, accompanied, if not caused, by masturbation. I have such an instance now under treatment in a young woman who thinks herself pregnant, and who is much addicted to the habit referred to; but she has no uterine or ovarian lesion of any kind, and it is probable that the masturbation is merely a symptom of her insanity, and will cease with the cure of her mental symptoms.

If delusions or conduct of a sexual nature were always associated with uterine disease, or if in an insane person the presence of disease of the genital organs were always accompanied with mental symptoms of a correlated kind, there would be much less responsibility than there now is in operative interference. From the nature of things, there must be stored up in the brain impressions derived at different times from the sexual system, and these impressions may be roused into activity either by disease of the brain itself or by the presence of continued irritation from below; but when this latter is in the form of disease, say a tumour, surely the irritation is of a very different kind from the normal one which first of all set up the correlated condition of brain. The irritation caused by an overloaded testis is very different from that caused by a tumour of the testis; the one gives sensations of a very definite character, the other simply directs attention to a particular part, and in a very disagreeable manner too. There is, then, nothing strange in a progressive disorder of the brain attacking that part where impressions from the sexual organs have been received; and if so, what is called "ovarian insanity," "uterine insanity," &c., may be in some instances a

primary cerebral disorder, and no more connected with disorder of the genital organs than is the delusion that a man is a windmill connected with the necessity of having one always before his eyes. One sees in insanity connected with visceral diseases the frequency of delusions of the depressed type, of false ideas of persecution or of injury about to be inflicted, and these whether the disease is of the lungs, liver, or uterus; but a condition of the blood will also cause the same kind of delusion, and so it becomes impossible to judge of the viscus affected by the character of the delusion. In fact, it looks as if in most instances where a visceral influence acts on the brain, it does so by altering the character of the blood; although any local cause occurring at this time and causing pain may in addition set up delusions having special reference to the local affection. It thus appears that a woman may have uterine or ovarian disease without insanity, or there may be insanity, and yet the delusions may not assume a sexual form, or there may be a sexual form of insanity and no disease or affection of the genital organs. A very interesting example of the co-existence of the two diseases was recently shown in a case under the care of Mr. Richards of the Hanwell Asylum, where a woman who was melancholy had ovariotomy performed. Mr. Richards says: "Before the operation she was in one of her better moods, but about three days after the tumour had been removed she became very excited, had hallucinations of sight and hearing, and said that her husband was looking at her through the window, and that he was tapping the glass and talking to her. Since the operation she has been steadily improving." It would appear, then, that in this case the mental symptoms had no more than a general connection with the ovarian disease, probably dependent on debility, and only cured by the improvement in general health due to the extirpation of the tumour.

No cases give more trouble than those of young women, generally of the strumous type, in whom there is present either epilepsy, or a combination of hysteria with epilepsy and suicidal attempts, occurring chiefly about the time of the menstrual periods. There is no doubt here of the brain affection, and there is also little doubt of the influence of the ovarian function in aggravating the symptoms. In cases of this sort I have found wet-cupping over the ovaries to be of very great advantage. There was a young woman, aged 24 years, here, who at the times of the periods was almost unmanageable. Her previous history was one of dissipation and excitement, which had brought her into a low state of bodily health, with irregular, and at times suppressed, menstruation. She was very

suicidal (and on one occasion nearly succeeded in an attempt) at the time of the periods, and we tried various medical remedies in vain. At length I had her cupped on several occasions in the ovarian region, and this was attended with the best results. At last she was discharged cured ; but I had reason to believe she resumed her old habits, in consequence of which she was again placed under certificates for a short time. She is now out in service, and is very well.

The pain in the head that women with uterine or ovarian derangements suffer from is a very prominent symptom in an epileptic girl here, who is occasionally very suicidal and troublesome, and both the pain and the mental affection are much relieved by the wet-cupping. This girl became affected a short time before the period of puberty, and menstruation up to the time of her coming here had never been properly developed. In fact, she never looked her age, and is even now somewhat childish both in her growth and mental condition. She is not cured, and is still epileptic, but by cupping we have much relieved the mental symptoms, and have established fairly regular menstruation. The advantage of wet-cupping in cases of this description is, that it acts on the uterine organs without specially directing attention to them, and without rendering an internal examination necessary. It depletes the system in a way that is now generally recognised as beneficial in epilepsy, and it is much safer than is the employing leeches or the lancet—a not unimportant consideration when dealing with hysterical and suicidal women.

Whether hysteria is or is not always connected with disturbance of the sexual organs, there can be no doubt as to its being anything but a form of mental weakness, occurring as it does in persons of all sorts of habit—men as well as women—and, it may be noticed, playing a large part in the cases benefited by this cupping treatment. That hysteria is a true mental affection would appear to be established by what we often see in men, especially after prolonged periods of work or anxiety. For instance, a man who has become "nervous" will, when his brain is fatigued by more worry than usual, feel a difficulty in walking, or at any rate, in walking in certain places. He can walk perhaps in the open air, but is afraid of walking along a pavement or in passages, not because he is not perfectly able to do it, but because his ideo-motor cells are temporarily exhausted. There is no affection of the cord in these cases, nor of the reflex system, but the upper cells are alone involved, just as is the case when sudden excitement, anger, fear, &c., make it impossible for him to write steadily or walk firmly. Cases of exhaustion from drink or accident come under the same category, and make a correct

diagnosis at times very difficult. I remember a man being brought here in an absolutely helpless condition; he could not walk, his speech was almost inarticulate, and he was quite demented; but after a time, with care and rest and feeding, he became stronger in his limbs, his ideas returned, being at first expressed incoherently, but gradually becoming more connected, and at length he recovered absolutely. Such cases are often mistaken for general paralysis, and I do not see how the diagnosis is to be made unless the element of time is well considered and the person comes under treatment sufficiently early before exhaustion has led to actual organic degeneration. If a person, especially a woman, gets well after an attack of this sort, she is said to have been "hysterical" or suffering from "neurasthenia," and the condition is viewed as one depending merely on want of energy; but it is a very real diseased state, and one the importance of which, as regards true recognition, cannot be over-estimated. Nothing strikes me more forcibly than the continuance, the violence, and the range of delusions and hallucinations, where there is every reason to believe that the patient is suffering merely from brain exhaustion, and not from actual disease. The histories that we obtain are generally unreliable, but where they can be believed, they point to short periods of invasion, and there is little or no evidence of inflammatory action; the duration, even for a considerable time, of alarming symptoms must not be over-estimated as regards hope of eventual recovery. In men we see this temporary exhaustion produce symptoms of paralysis, or at any rate muscular enfeeblement, loss of sexual power, and consequently a melancholic and suicidal state; but it would be a great error to devote special treatment to increasing the reflex activity of the cord, or to stimulating special centres; and so it is in women. Almost the first organs to suffer in a weakened constitutional state, from any cause, are the uterine and ovarian; and then the woman's attention being directed to this irregularity, she becomes depressed and probably deluded about them. Now, attention specially devoted to any viscus notably affects the functions of that organ, and, where periodical functions should be the order, an interrupted rhythm is superinduced, and the catamenia either cease or become irregular; consequently the ovaries become congested or imperfectly excited at about the usual time; but the crisis passes without relief, and the mind of the patient is made still worse. The treatment here is obviously one of the psycho-pathological kind, and anything like direct examinations, internal caustic, &c., would be mischievous. Wet-cupping acts, if applied at the proper time, by relieving the system of blood, and it certainly

eases the pain and sense of constriction round the loins, and by so doing prevents the attention of the patient being drawn to the part. I have seen the sudden re-establishment of the ovarian functions and the restoration to mental health occur together; but there was no connection between the two; they both depended on the brain recovery from exhaustion. Indeed, I have seen the mental symptoms recover first, and be followed by re-establishment of the uterine functions; and I have seen the latter re-established when both were simultaneously affected and yet no mental recovery has set in.

There is reason to believe that an impression once made on the cells of the brain is never obliterated, and an attack of insanity will at times develop properties of mind hitherto unsuspected. Thus a man may in his youth have learned a foreign language, which he has afterwards had no occasion to use, and has therefore forgotten; but an attack of mania will cause him to speak it fluently, because the potentiality of his cells has been made active by disease; and when the irritation subsides he is not conscious of the versatility that he has displayed. So may we argue that a central condition established by previous uterine impressions may be excited and made prominent in disease, and disappear after recovery. People often complain of a particular organ being affected when in reality some other viscus is in fault, because they refer a pain in a particular region to the viscus they believe to be situated there; and so any pain or discomfort in the pelvic region is referred to the uterus as the cause, but it does not therefore follow that the true disease is there. There may be some peculiar state of feeling due to a congested liver or kidney that we are not aware of, just as a "sexual" feeling is recognised as due to a certain condition of the genital organs; and this state is probably that of a depression or mental pain, liable to be easily roused when the visceral disturbance has ceased and the central nervous system is affected. So, equally, is the sexual feeling aroused by central irritation. Many women fancy that their internal organs are absent, not because they are devoid of sensation or are free from pain (because then people in health ought not to believe in their possession of viscera), but because their central nervous system is affected; and yet they could not be cured by operative treatment directed to any viscus. In fact, it is only by correct reasoning that we come to the conclusion that we are as others are; and as long as the brain is sound, affections of other organs are estimated at their true value.

A prominent cause of insanity is overwork, and this must refer not only to the voluntary acts of continued labour or thought,

but to the prolonged irritation of a part of the brain from peripheral causes. Worry and anxiety cause insanity by the continuous action of a group of cells that are never allowed to rest. Every one knows how even a little matter may cause sleeplessness, loss of appetite, and mental exhaustion, especially in people of a "nervous" temperament who are simply unable to shake off the matter until it has been settled one way or another. A criminal goes through grievous mental pain before and during his trial, but when the sentence is pronounced he accepts the inevitable, becomes quieter, and is able to rest. Just so we can understand how a pain in the neighbourhood of the uterus or some uterine irregularity will keep up a "worry" of the related cells in the brain, and lead to delusions and hallucinations of a sexual nature, which will continue after the uterine irregularity has been relieved, and may have been so detrimental in its nature, so pronounced in its intensity, that recovery is impossible, and the peculiar and specific delusions will remain even after the primary disease that set them up has been cured. How useless in such a case would be a serious and radical operation on the generative organs!

Some persons are destitute of properly developed generative organs, and yet their ideas and talk are of a very licentious and disgusting kind, though it is probable that they are not of the true sexual nature, and they will commit crimes of an unnatural character, which are really perverted mental acts, due to defective mental organisation. Others, again, of perfect development, seem to be deficient in philoprogenitiveness, and become mixed up in lawsuits because of their supposed want of capacity; the real physiological reason being a cerebral defect, not a local and specific one. The same thing applies to women. A cold unsympathetic nature is often joined to a very complete generative development, but the cerebral development is missing, and such women would go all their lives without any sexual want; although they are capable of having children. Suppose such a woman to become insane after parturition, from any cause, such as shock, trouble, &c.; the chances are that her conduct becomes the reverse of what it was; she becomes glaringly sexual both in acts and conversation, and remains so as long as the brain irritation lasts. There is no doubt that the sexual is an innate faculty of the brain, stronger in some than in others, capable of development by cultivation, and one whose existence is possible even without any correspondence of external organs.

The above shows us that there are two groups of sexual disorders of mind: one dependent on disease or irritation in the generative organs; the other central and independent of them. It

is not customary in English asylums to give a list of all the uterine affections which are met with or treated, nor is it usual to examine the internal organs of every female patient; but much attention has been given to the subject in America, and special gynecologists (generally lady-doctors) have been appointed for this purpose.

With the exception of some remarks about the suppression of menstruation in the excited stage of "*folie circulaire*," I have not been able to arrive at any great results obtained from these constant examinations, and it is, therefore, difficult to say whether they have been of advantage or not; but judging from the list of uterine and ovarian complaints that have been under treatment in one of these asylums, and which are recorded in the annual report of that institution, it seems hard to believe, although such is not stated, that some of the cases of insanity were not directly caused by the generative lesions, and that some of the cures were not a consequence of the special treatment. It would indeed be strange if it were not so. A prolonged uterine discharge will cause a melancholic depression or a maniacal excitement from sheer exhaustion; but privation and hardship will do the same, and for the same reason. Still it would not be right to call the first case one of ovarian or uterine insanity; and an old maid may have sexual and salacious delusions, but there is no necessary connection between these and her uterine organs, which may indeed be in an undeveloped condition.

If disease in the sexual organs always set up brain symptoms of an allied nature, we might fairly argue that it was right, if possible, to remove the irritating organ, especially as the tendency to a demented state is the result of a too prolonged state of cerebral irritation; but we have seen that the symptoms of uterine or ovarian disease may be delusions quite different in kind, whilst at another time we may see sexual delusions without any affection of the generative organs. Are the signs of insanity due to the generative organs intermittent? Do we note that an attack of excitement or depression is coincident with the periodical excitement of the generative organs, ceasing when the latter subsides, or continuous in the case of constant irritation? We do see recurrent attacks of insanity of different forms at intervals of a month, but not necessarily concurrent with the menstruation. These are, in fact, periodic nerve-attacks, quite independent of, though they may be cotemporaneous with, the menstrual function. The puzzle is to find out if *the insanity* would disappear with the restored structure and function of the generative organs; and not to pay any attention to the special nature of the delusions. I have known a male patient acquire the delusion that his viscera had been abstracted by the surgeon who had occasion to examine him per rectum.

If it be true that a woman may have delusions of an innocent kind, hallucinations of one sense or another, show no sign of sexuality in her actions or habits, and yet be in a state dependent on uterine or ovarian lesion, it becomes a question whether the Americans are not right in examining internally every patient, and the difficulty of treating female cases in asylums is much increased. I see no reason why many of the women here who suffer from delusions of persecution, melancholia, violence, and impulsiveness should not really be cases where the primary cause of the disease is in the pelvic organs; but I cannot say that I know this to be the case, because I have not yet seen the way to make tentative internal examinations, lest I should create a new focus of disorder of a nature more repulsive than the one existing. We see how an insanity due to gout or lead-poisoning will assume different forms, and how even a moral cause may produce either excitement or depression without delusions, so that there is nothing strange in the theory of a cause setting up different groups of symptoms. In the lower classes of women it is difficult at times to say how much of the filthy phrases they use and of the obscene acts they commit is the result of their manner of bringing up; but this must be carefully estimated in looking for a derangement of the sexual organs in the presence of delusions such as are here indicated. There is a woman here of the most filthy conversation and given to exposing herself frequently, yet she has no sign of uterine derangement, nor is there any reason to believe that her sexual inclinations are excessive. There is no *casus operandi* as far as her sexual organs are concerned; in fact, her insanity depends on purely central causes; but if it depended on special external ones, it could not have a more special set of symptoms. As in ordinary life it is not always found that virtue and the profession of it go together, so in the insane world delusions of a sexual nature and a facile nature do not necessarily co-exist. The insanity of a patient is often made more prominent at the menstrual periods, although she may not be sane in the interperiodic time. To take one out of many instances here; we have a woman who is always demented and incoherent, but at the time of the menstrual period she becomes noisy, mistakes the sex of the nurses, and fancies that she is going to be hung. Although this excited state never comes on except at the times of the period, and is most probably caused by them, it is clearly only then an exacerbation of an already existing state, and there are no indications of the necessity for any uterine treatment. A group of symptoms may be due to uterine causes which have disappeared whilst the insanity remains. Such would be most likely to be seen where

hereditary taint was present, and the prognosis, at any rate for a time, would be satisfactory.

We should expect the symptoms to be continuous and constant in character when really due to uterine causes, with, possibly, exacerbations at the periodic times; and I have found many cases of insanity, where the cause could not be traced, develop uterine or ovarian disease without any change in the nature or intensity of the insanity. It comes to this, that in no case of insanity can we say for certain, judging from the brain symptoms, that the generative organs are affected, and we must look therefore independently for the latter. Considering the great numbers of women treated at the various hospitals for disorder of the generative organs, it is rather surprising that we hear so little of it in asylums; but the signs of disorder of these parts are certainly not prominent in the insane; and except that complaint of irregularity of menstruation is especially common in the epileptic, one hears little from the patients themselves of uterine disorder. I therefore am inclined to think that sexual or uterine and ovarian insanity is by no means a common thing, and that, whilst not denying the possibility of its existence, it is much exaggerated in importance as a disease caused by special lesions; and I think that it is right to look to the brain itself or the constitutional diathesis for the mischief. It is quite possible for mental shock or fright or great worry to affect the functional action of the ovaries—a factor that should be borne in mind in estimating the correlation of amenorrhœa and insanity; and nothing is more destructive of sexual inclination than mental work, worry, and irritation, whilst an attack of maniacal excitement will stimulate the genital centre and cause habits of abuse that are really secondary to the brain disease, and can be cured only by the subsidence of the brain lesion. The knowledge, then, of a suppressed uterine function might be of positive injury if we were to treat it as of primary importance, instead of being, as it is, very often secondary. The receipt of bad news will often cause profuse menorrhagia; so there can be no doubt of the influence of the brain on the uterus, and the foundation is thus laid for chronic changes in the generative organs—changes due to congestion and altered nerve tone—which in their turn may react on the central nervous system.

In deciding on any case of insanity with uterine complication, we have, then, to clearly understand whether the uterine or ovarian affection is dependent on the insanity or *vice versâ*, or whether both are the concomitant results of a cause such as constitutional weakness from starvation, suckling, loss of blood, &c.; and perhaps one of the best guides is the persistence of the insane state

during the intervals between the periods. I had a patient of the most violent habits at the time of her periods, very impulsive, and I really believe at these times incapable of controlling herself. During the intervals she was rational on most subjects, but not really of sound mind and of a somewhat erotic nature; and I think that the operation of oöphorectomy would have much relieved her symptoms, at any rate the violent ones, but of this I could not be sufficiently sure to be able to recommend it. When a patient is in an acute state of violent insanity, anything like a serious operation is out of the question, and there is always the probability of acute symptoms coming on in any insane person, rendering the rest which is so indispensable after an operation impossible. Recognising how any digital examination excites the female mind, and how difficult are the attending and the after conditions of treatment, together with the uncertainty as to the amount of dependence of cerebral symptoms on the uterine organs, it would appear that treatment of a local kind is not likely to prove very satisfactory. A short time ago I had occasion to examine a woman here about whom a lawsuit was pending. The question was as to the proper development of the generative organs, and it was sought to obtain a divorce on the ground of alleged malformation. My examination discovered no defect of any kind, but the effect on the conduct of the patient has been most marked and unsatisfactory. Though she has no disease or disorder of the genital system, she has since the examinations referred to become much more unmanageable, her ideas are very salacious, her language filthy, and her conduct violent. It might be said that the concurrence is accidental, and that the depravity of the symptoms is due to the spread of her brain disease. This is, I think, very likely; and if so, it is instructive, as showing how a purely central disorder may cause symptoms in their nature referable to a particular viscus when no disease of that viscus exists, and how careful we should be in cases of brain disease of creating impressions that may lead to such untimely results. Judged purely by the objective symptoms, it would be right to operate on the ovarian organs of this woman; but if what has been above stated is correct, the only cure is to be expected in a better condition of the brain. My experience of delusions of a sexual character is that they are not more persistent than other forms, and as regards prognosis, that they are not specially worse than other kinds. They may be of short duration in acute insanity, and they may remain fixed in their character and intensity as long as the central disease lasts, or they may change entirely in their nature with the progress of the central brain irritation, whether irregularity or disease of the sexual organs is present or not.

ON

THE HYPODERMIC INJECTION OF STRYCHNIA IN CASES OF CARDIAC FAILURE.

BY

S. HERBERT HABERSHON, M.B.

I am indebted to the kindness of Dr. Andrew and Sir Dyce Duckworth for permission to publish the following cases which have occurred in their wards, because they serve to illustrate not only the value of strychnia as one of the most rapid and effective of cardiac stimulants, but also the class of cases in which a beneficial result is likely to be obtained from its use. I have completed the number by two in which the experience is not my own. I am indebted to Mr. Calvert for the notes of one, and for the other to Dr. Roughton.

By the term "cardiac failure" I mean the loss of contractile power of the cardiac muscle, and the consequent tendency of the heart to stop beating in diastole. This is the immediate cause of death in cases of disease other than cardiac.

At the end of a case of long-standing disease the cardiac muscle may share with the rest of the tissues in a want of nutrition, and atrophy or degeneration of its fibres induces feebleness of action or a want of power sufficient to maintain life. I do not propose to refer to such. The class of cases in which I have found a powerful cardiac stimulant, such as strychnia, specially applicable is where the failure has been usually more sudden. Either by a sudden shock, nervous or otherwise, or indirectly by an acute disease of a remote organ, a previously healthy organ receives a greater call upon its power than it can respond to, or, in a case of cardiac disease, compensation is suddenly ruptured, and there is no increase of force to meet the increased need. In such cases of impending death, if the power of the heart-beat can be increased and maintained

for a certain time until the effect of the shock has passed away, or the crisis of the disease (if it be an acute one) has been reached, recovery will often ensue, and a recovery that may be justly attributed to the action of the stimulant.

The cases that I report will explain this more fully. Moreover, they will, I trust, demonstrate the value of strychnia *par excellence* as a cardiac drug, and the distinct advantage to be gained from its hypodermic administration when a rapid effect upon the heart is desirable. At the same time there are instances where a sudden mechanical impediment to the circulation exists, such as a pulmonary embolus or ante-mortem clots in the heart, and in these death is usually rapid, and stimulants can be of no avail.

In several of the cases strychnia has been found effective where other stimulants have failed to produce a response. This leads me to compare briefly the action of some of the ordinary drugs in use, because I apprehend the secret of the power of strychnia lies in the difference of its action. The physiology of nerve and muscle tissues teaches us that when the functional activity of one or all of the muscles within the body is reduced, this fatigue is not only due to exhaustion of the muscle, but in part to an exhaustion of motor nerves and of the central nervous system concerned in the production of voluntary impulses (Michael Foster). The same is probably true of the heart. A powerful stimulant to its motor-mechanism of nerve-cells will produce contraction when the irritability of its muscle-fibres is much reduced, because fatigue of the heart as well as general fatigue is due to loss of functional activity of its motor-nervous mechanisms as much as to that of its muscle-fibres.

This seems to me the reason why strychnia is so powerful and effective a stimulant. It acts upon the motor nerves, and Dr. Brunton has shown that it acts also directly upon the motor ganglia of the heart, and that it is a stimulant to the central respiratory system in the medulla as well as to the local respiratory centres in the spinal cord. Many of the other stimulants in use act in large measure upon the muscular tissues of the heart. *Alcoholic* stimulants and *ether* are of this nature. They increase the power of contraction of the heart chiefly by affording a direct stimulus to its muscular fibres. In a less degree they assist the heart through its nervous mechanism, and indirectly through stimulation of the centres in the brain. When large doses are given, however, the effect on nerves is depressant rather than stimulant. In cases of great prostration from nervous shock, alcohol and ether appear to fail in cases where strychnia given hypodermically has rapidly pulled the patient round.

On several occasions recorded in the following cases, during the progress of cardiac disease brandy and ether have been first tried, and their failure to act has suggested the use of strychnia. As a rapid stimulant ether is preferable to alcohol because of its greater diffusibility, and its hypodermic injection is still more efficacious. *Ammonia* is a powerful and direct stimulant to the cardiac muscle, and it acts indirectly, partly by exciting its accelerating centre, and partly by stimulation of the respiratory and vasomotor centres; but it is rapidly eliminated, and I have never known it to act where brandy and ether have not succeeded. *Digitalis* is still more complex in its action. It is a powerful stimulant to the heart, and if given in moderate doses, increases its force of contraction, and reduces the frequency of the beats. It also constricts the smaller arteries. As to the method of its action there is still some difference of opinion. Undoubtedly it stimulates the inhibitory mechanism of the heart by exciting the peripheral ends of the vagus nerve; but how much of the diminution in the number of the heart-beats is due to this cause, and how much is merely relative to the increased resistance in the arterioles, is a disputed question. Probably both factors are at work. Again, it is fully proven that digitalis increases the energy of individual contractions by a direct stimulant action upon the muscular fibres, though some affirm that this increase of energy is directly proportional to the lessening of the number of the beats, whereby the heart, previously embarrassed by over-action, gains time to recover itself between the contractions. According to this view, digitalis would be a sedative to the heart, and not in any sense a stimulant. Dr. T. Lauder Brunton has shown conclusively, to my mind, that this drug acts in part by directly exciting the muscular fibres of the heart, and that it is a most potent stimulant. Further, digitalis excites the vasomotor centres in the medulla and spinal cord, and increases the tonic contraction of the arterioles. It is possible that it may also act upon the muscular walls of the small arteries in the same manner as upon the walls of the heart. In large doses it causes paralysis of the heart, with rapid and feeble action.

Apart, then, from their own peculiar and special actions, the drugs I have mentioned are to a large extent muscle stimulants, while in the case of strychnia it is the excito-motor element, the property of stimulation of motor nerves and ganglia that preponderates. I take this to be the reason why in some of the following cases the effect of the action of strychnia has been demonstrated in a most striking manner after other stimulants

have failed. In three classes of cases strychnia will be certainly found valuable when applied subcutaneously :—

(1.) In many cases where the feebleness of the heart's action depends primarily upon an acute lung affection, such, for instance, as the two cases of acute pneumonia reported, or a case of renal disease in which a sudden œdema of the lung supervenes, accompanied by rapid and feeble action of the heart. In these the double action of strychnia on heart and lungs alike renders it of especial value.

(2.) In cases of cardiac disease where, by the primary affection of the heart, the arterial system is unfilled, the great nerve centres in the brain suffer from a want of nutrition, and are, so to speak, starved. An example may be seen in the case of extreme aortic regurgitation which I shall relate, in which distressing dyspnœa culminates in that form of breathing known as "cerebral" or "Cheyne-Stokes;" or, again, in cases of mitral disease during the course of which a sudden dilatation occurs, whether from unusual muscular effort or other cause.

(3.) In a third class of cases the feeble action is due to a reflex cause (also in the course of cardiac disease); for instance, "shock" produced by exhaustion, by a local cause, such as embolus in the brain (Case V.), by extreme cold (Case VII.), or emotional excitement or fright.

In the above cases I speak from personal experience. Others in which it might prove valuable suggest themselves; in ordinary syncope, as well as in cases of cardiac disease, if the syncope is prolonged and does not yield rapidly to simpler remedies at hand; and it is worthy of trial in surgical cases of shock after operation.

One word as to the advantage of the hypodermic use of strychnia. It is well known that in certain states of debility or exhaustion the functions of digestion and absorption are retarded. Food, as well as medicines, either remain in the stomach, or, if they pass the pylorus, fail to be absorbed, and the patient reaps no benefit from them. This is a common fact in medical experience. By injection "sub cutem" the full effect of the drug is produced at once upon the heart or vessels, and the end is gained without the intermediate process of a tardy absorption from the alimentary canal. Moreover, when a drug is injected into the veins or lymphatics, it is conveyed by the circulation to the heart before its distribution to other organs; and therefore, in cardiac cases, if it is the stimulant and not the tonic action of the drug that is desired, the immediate and not the permanent effect, the more rapidly a given dose can be thrown into the circulation the greater is the stimulus afforded to the

cardiac muscle or ganglia. Hypodermic injections of strychnia have been used for several years past with good results in some of the wards of the London Hospital, and by a few physicians in private cases, but I have not been able to find any published account. It certainly deserves to be employed more frequently.

As to the solution for subcutaneous injection, I have tried the liquor strychniæ of the British Pharmacopœia, and also the acid sulphate. Mr. W. Martindale recommends the latter as being greatly preferable to the ordinary solution. It is more soluble and contains no spirit. The most useful strength is one grain in fifty minims.

Case I.[1]—*Morbus Cordis* (*Mitral and Aortic*).

J. H., a clothing salesman, was admitted to John Ward on January 27, 1886, under the care of Sir Dyce Duckworth. He complained of dyspnœa and palpitation on exertion, of wakeful nights on account of his short breath, and lately of considerable œdema of the extremities. He had been ill for seven years, and was told six years ago that his heart was affected. He had never had rheumatic fever. For four or five years he had suffered from gnawing pain in the region of the liver. For two years his breathing had been bad, and for three months his legs were swollen. Until recently he was a heavy drinker of spirits.

The patient was a big, plethoric man, with flushed face and slight tremors of the hands. There was some hypertrophy of the heart; the impulse heaving and the apex-beat diffused, and most plainly felt in the sixth intercostal space, a little within the left nipple-line. The heart sounds were much obscured by rhonchus, but a well-marked diastolic murmur could be detected over the aortic cartilage, and conducted down the sternum. His respirations were 36 to the minute; his pulse 114, soft and sudden, irregular, and occasionally intermitting—a good example of the water-hammer pulse. The liver was enlarged, and the urine contained about a third of albumen, but no glucose. There was very considerable œdema of the lower extremities.

The first two nights after admission he was disturbed by attacks of dyspnœa, sometimes severe. On January 30th he was not so well, and complained of gouty pains in both great-toes, accompanied by heat and swelling. The blood was found to be laden

[1] For the early and later notes of this and the following case I have to thank Dr. A. E. Garrod.

with uric acid, as shown by the thread test. The physical signs were somewhat altered. The catarrhal sounds having in great measure cleared up, a double basic murmur, loudest over the aorta, and a systolic apex murmur could be heard. The albumen in the urine had diminished to one twenty-fifth.

Up to this time he had been treated with strychnia in two-minim doses of the solution, with ammonia and senega every four hours, and an occasional ether draught to relieve his dyspnœa, also with fluid diet and three ounces of gin per diem. At night morphia had been tried, with the effect of producing excitement only. Paraldehyde with ether had met with partial success, and on the night of the 31st January he was given a mixture of cannabis indica, hyoscyamus, and ammonium bromide.

His breath was very short, and he wandered occasionally during sleep. Towards morning (February 1) the dyspnœa increased and the respirations became irregular. At 4.30 A.M. I received a sudden call to the ward. The patient was in a drowsy semi-unconscious state, responding feebly to questions, and wandering quietly if left to himself. His breathing was typically "Cheyne-Stokes," with long intermissions of nearly a quarter of a minute; the pulse 140, small and collapsing, being more rapid during the intervals of apnœa.

He had previously been given an ether draught with half an ounce of brandy without any change in his condition. I then injected "sub cutem" two minims of the liquor strychniæ ($\frac{1}{60}$ gr.) and applied a mustard-poultice to the heart. In a few minutes the pulse had improved in volume, though its frequency was the same. A few hours later the respirations had regained their normal rhythm, but were still hurried, 46 to the minute; the pulse 84, occasionally intermitting. At the same time the patient was conscious and could converse freely. He was now given five minims of the liquor strychniæ, with twenty minims of compound spirit of ether every four hours.

On February 2d Dr. A. Garrod's note was: "The best night he has had since admission, but his breath is still very short, though more regular. He complains of precordial pain extending to the arm. Pulse 72, very irregular. The pain has been somewhat relieved by nitrite of amyl, which, however, produced great dyspnœa."

With some fluctuations the patient continued to improve from this date. The anginal pain was relieved by arsenic. On his discharge, March 30th, the pulse was regular with 100 beats to the minute, the respirations 34, and regular. The albuminuria had been reduced to a trace only, and the patient left the Hospital in a much improved condition.

CASE II.—*Double Pneumonia.*

J. M., aged 36, in good health until March 5, 1886, was then seized with a rigor followed by cough and acute pain in the left side. The cough and pain continued until admission on March 8th to John Ward, under the care of Sir Dyce Duckworth. His temperature was then 101.7°, the respirations 36 to the minute, his pulse 108, regular and soft. The patient looked ill. There was no sign of herpes and no expectoration.

An examination of the chest revealed a defective expansion generally of the left side with diminished vocal vibrations and an impaired percussion note. At the base of the left lung behind there was dulness up to the angle of the scapula, with bronchial breathing and bronchophony, and at the upper part the voice resonance was ægophonic. There were no moist sounds. At the right side the breathing in front was coarser than at the left, but no other abnormal sounds.

On March 9th, the fifth day of the disease, the frequency of the respirations increased to 56 with greater lividity. The pulse was 120, though the temperature had fallen to 99.4°. The patient, who had been taking salines since admission without stimulants, was now given two grains of quinine every four hours with five ounces of brandy per diem.

The temperature continued to fall, reaching 98° on the following morning, without, however, a corresponding improvement in the patient's condition.

On March 10th (sixth day) the note is as follows :—"Delirious last night and also this morning. The temperature is again rising, 101° (about midday). Respirations 58. Little or no expectoration. Pulse 136, firmer than yesterday. The physical signs have advanced. There is now dulness at both bases up to mid-scapula. The urine contains a trace of albumen."

March 11th.—"Temperature last night 101.8°, and this morning 102°. The patient is very bad this morning, and in a typhoid state. He slept little, and all night was in a condition of quiet delirium, passing everything under him, with increasing lividity and dyspnœa, rattling in throat, and marked subsultus tendinum. The respirations are now 60, the pulse 130, small, regular, and very soft." He was ordered five-grain doses of quinine every four hours with tincture of musk and ether. At the same time the brandy was increased to twelve ounces per diem.

In the afternoon the case looked hopeless. The patient was

almost comatose, the respirations were 60, and the pulse 128, the temperature continuing high. At 6.45 P.M. two minims of liquor strychniæ ($\frac{1}{60}$ gr.) were injected hypodermically. A little improvement in pulse was manifest almost immediately, but no sign of return to consciousness. Again at 10.45 $1\frac{1}{2}$ minims of strychnia were injected ($\frac{1}{50}$ gr.); the pulse and respirations remaining of the same frequency as before.

At 12.30 A.M., shortly after midnight, $\frac{1}{60}$ gr. was again injected. The patient now showed distinct signs of improvement, and could be roused a little. He began to expectorate, and would take nourishment better. Hypodermics of $\frac{1}{60}$ gr. of strychnia were repeated at 4 A.M. and 8 A.M.

The morning note on the 12th by Dr. A. Garrod is as follows:—"During the last twenty hours the patient has had five injections of strychnia. He is much better this morning, is quite conscious, and is taking food admirably. The temperature has fallen during the night, and is normal this morning (98.6°). After midnight he had some natural sleep. The pulse is 120, much less soft; respirations 56. He is expectorating fairly."

March 13th.—Is improving. Slept fairly well last night, and takes food well. Temperature 99° last night, 98° this morning. Pulse 100; respirations 56. The strychnia injection again repeated. Expectoration is more free; the sputum rusty. Since the previous day has been taking minim doses of strychnia with his quinine every four hours.

The further progress of the case was that of uninterrupted recovery. On the 13th the brandy was reduced to ten ounces. On the 15th, with a firmer pulse of 90 and 46 respirations to the minute, stimulants were still further decreased to four ounces of brandy and six ounces of wine. The quinine was now ordered three times a day, and reduced to two grains on the 27th. On the 29th the patient was up in the ward, and was discharged on the 9th April.

Case III.—*Double Pneumonia.*

C. K., aged 22, van-driver, a temperate man with no record of any serious illness, was admitted to John Ward on July 27, 1886, under Sir Dyce Duckworth's care.

He had taken a chill on the 25th after getting wet. On the 26th he was seized with sharp pain in the right side and cough, followed by a rigor and vomiting. On admission his face was flushed, his temperature 103.4°, his breath very short, and he had a dry cough without expectoration. There was no

herpes. His tongue was dry and furred; the pulse 108, full and strong. At both bases of the lungs behind were the signs of consolidation well marked. Dulness at the right side extending to mid-scapula; at the left a trifle higher. The cardiac sounds were normal.

On the 28th he had a fair night; the respirations were 40, the pulse 128, and his temperature 102.4°. He had no pain. There was some expectoration with rusty sputum, and no sign of herpes. On the right side consolidation had extended behind as high as the spine of the scapula; on the left there was not much advance. No moist sounds could be heard.

29th.—Pulse 128, softer and of smaller volume; respirations 54; the alæ nasi working a little; the face more dusky, and he complained of great pain in the right axilla. Temperature 103.2°.

At 4 A.M. he had an injection of morphia to relieve the pain in the side, and slept after it for two hours. Later in the day six leeches were applied in the right axilla with great relief to the pain, and he was ordered six ounces of brandy per diem.

30th.—The morning temperature 102.6°, pulse 120, and respirations 60.

31st.—The patient had been restless and delirious during the night, struggling to get out of bed. An ice-bag to the head and brandy and ether internally quieted the excitement. The pulse was 120, of fair volume and strength. Respirations had increased to 68. The morning temperature was 102.2°.

Examination of the chest revealed a still further advance in the physical signs. Vesicular breathing only above the spines of the scapulæ. Below this were the signs of consolidation with abundant crepitation. In front there was pleural friction over the right side. At night the temperature rose to 104.4°. The patient was delirious. There was subsultus tendinum, and the tongue was tremulous on protrusion. The brandy was increased to ten ounces. Quinine continued. Has been taking two-grain doses every four hours since admission.

August 1.—Pulse 120; respirations 60; temperature 103.6°. Subsultus and floccitatio. Refused food, and had to be fed by a nasal tube.

August 2 (eighth day).—The patient was delirious and took food with difficulty; in a much more exhausted condition, passing urine and motions under him, with increased subsultus and picking at the bed-clothes.

3 A.M.—Countenance dusky; breathing more laboured; mucous rattle in throat, Pulse irregular in force and rhythm. Temperature 100.4°. $\frac{1}{60}$ gr. of strychnia was injected (two minims

of the liquor), after which both pulse and respiration improved, and the cough became more frequent.

6 A.M.—Another hypodermic of strychnia given ($\frac{1}{60}$ gr.), also with improvement to pulse and respiration. Ten minims of digitalis were added to the quinine medicine.

7.15 A.M.—He vomited once, and began to expectorate more freely. The patient has taken nine ounces of brandy and one ether draught during the last twenty-four hours. Hypodermics of strychnia ($\frac{1}{60}$ gr.) were continued during the day—at 12 noon and 3.30 P.M.

8 P.M.—Temperature rising; breathing of the "Cheyne-Stokes" character; pulse irregular in rhythm and force; the wandering increasing, and the patient more livid. $\frac{1}{60}$ gr. of strychnia again given.

11 P.M.—Pulse 132, regular and of better volume and strength. First cardiac sound clear. Temperature 102.8°. No longer mucous rattle in throat; not so delirious. Is conscious at present, though wandering at times. Subsultus of the tendons less manifest; no floccitatio. The bowels have acted three times during the last twenty-four hours, twice unconsciously, but not the last motion. He no longer passes water under him.

11.30 P.M.—Hypodermic $\frac{1}{60}$ gr. of strychnia repeated.

August 3 (ninth day).—At 12.30 A.M. he was given two drams of tincture of musk (2 grs.), and slept after it for several hours.

3 A.M.—Strychnia injection ($\frac{1}{60}$ gr.)

6 A.M.—Began to expectorate freely.

9.15 A.M.—Strychnia injection ($\frac{1}{60}$ gr.)

11 A.M.—Pulse 140, slightly irregular, fair strength; respirations 60, regular; temperature 103.8°. Hypodermics of strychnia ($\frac{1}{60}$ gr.) repeated at 12.45 P.M., 5.30 P.M., and 9.30 P.M. Brandy twelve ounces during the twenty-four hours. Quinine and digitalis continued every four hours.

August 4 (tenth day).—Pulse at 3 A.M. fell to 72, and later on as low as 69. Temperature fell to 99°. Digitalis stopped and brandy and ether given. Also at 3.45 A.M. strychnia $\frac{1}{60}$ gr. (hypoderm.) Expectoration feeble.

At 8 A.M. the temperature had risen to 100.4°, and the pulse was 88, and of fuller volume; the patient being now better, and quite conscious though drowsy; only slight subsultus. Cough more frequent and expectoration freer. Sputum not rusty. More air entering the bases of the lungs.

Hypodermics of $\frac{1}{60}$ gr. of strychnia repeated at 8.45 P.M., 10.45 P.M., and 3 A.M.

August 5th.—The temperature fell in the night from 102° to 98.2° this morning. Pulse now 102, of fair volume and strength.

Respirations 36, much quieter. Copious muco-purulent expectoration. Eight ounces of brandy the last twenty-four hours.

6th.—Improvement continued. Temperature 100° last night, 98.2° this morning; pulse 96, of good volume; respirations 39. Sleeps a great deal; physical signs are improving; more air entering the lungs; moist sounds abundant. Brandy reduced to six ounces the last twenty-four hours.

7th.—Temperature 98.2°. Breathing at bases no longer bronchial. Much cough and muco-purulent expectoration.

8th.—Pulse 78; respirations 30. No longer needs to be propped up in bed.

10th.—The brandy cut off. Six ounces of wine given.

Improvement continued daily, the physical signs in the lungs completely clearing by the 31st. He was discharged on September 3d.

In bad cases of pneumonia, such as the two just related, that is, in cases where a large portion of one or both lungs is involved, there is profound exhaustion (especially if the crisis be delayed), not only of the respiratory and cardiac muscles, but also of their nervous mechanism. The failure of each function is not wholly due to a loss of irritability of their muscles, but in part is owing to a fatigue of motor nerves, which are no longer able to respond to their ordinary stimulus, and of the respiratory and cardiac centres, which do not send forth the customary stimulus, as they are suffering from the want of proper oxygenation of the blood.

If the cerebral and local nerve centres be stimulated and the irritability of the motor nerves increased, that is, supplement the brandy and digitalis by a powerful nerve stimulant such as strychnia, unless too large a portion of lung is involved to be compatible with life, it is probable that the dangerous period before the crisis will be tided over. It will be observed in both cases that the effect of the strychnia was twofold, namely, to improve the volume of the pulse, and to cause additional expiratory efforts and an increase of expectoration.

Case IV.—*Morbus Cordis* (*Aortic and Mitral*).

E. L., aged 30, a thin spare woman, with sallow complexion but not jaundiced, was admitted to Hope Ward under the care of Dr. Andrew, June 6, 1885. She had never been well since an attack of rheumatic fever six years ago. She had suffered much for nine months since her last confinement from palpitation, and her breath had never recovered from that time.

For five or six weeks past the palpitation and dyspnœa had

increased; a week ago the legs and ankles began to swell; the abdomen had increased in size. On admission she complained of difficulty of breathing and palpitation, and of sharp pain in the cardiac region and the left shoulder. Her respirations were hurried, 48 to the minute; the pulse 84, regular but collapsing. The cardiac dulness was increased in all directions, commencing rather above the junction of the fourth costal cartilage with the sternum, the inner margin being a little to the right of the mid-sternal line, and the outer margin extending outwards and downwards to the position of the apex-beat in the sixth interspace, about one inch to the right of the mid-axillary line. The impulse was heaving and there was no thrill. A double murmur was to be heard at the apex; the systolic murmur conducted towards the axilla and heard all over the back. There was a double murmur at the lower end of the sternum. The second aortic sound was not clear. The lungs were normal; the liver could be plainly felt, large, tender, and extending to within an inch of the umbilicus. The urine contained a large trace of albumen. She was ordered two-minim doses of strychnia with ten minims of ether every four hours, and liquid diet with two ounces of brandy per diem.

June 7th.—She did not sleep. The breathing much embarrassed, even when propped in a sitting posture. At 10 A.M. the patient became pulseless and cold. She improved slightly after an ether draught with half an ounce of brandy. Shortly afterwards severe pain came on in the precordial region, with a paroxysm of dyspnœa. The anginal pain was partially but not wholly relieved by nitrite of amyl. The patient became rapidly worse, and at 11.30 the pulse could not be felt; the extremities were cold, and, with dyspnœa and lividity increasing, she appeared to be sinking. Two minims of liquor strychniæ ($\frac{1}{60}$ gr.) were injected hypodermically. In a few minutes the pulse could easily be felt, the dyspnœa diminished, and in an hour's time the patient had rallied, and was sitting up comfortably in bed talking to her friends.

8th.—Slept all night after $\frac{1}{6}$ gr. of morphia. Pulse 84; respirations 28. Is altogether quieter and easier since the previous day.

The improvement continued until the night of the 10th, when she had an attack of pain in the left side, and said she felt "as if something had given way." This was followed by cough and some blood-stained expectoration.

On the morning of the 11th the cardiac pain and dyspnœa returned, though not with the same severity as on the 7th. As before, she was given an ether draught, and as this did not im-

prove her condition, $\frac{1}{60}$ gr. of strychnia (two minims) was again injected hypodermically. An hour or two later the note is as follows:—"The pulse is stronger this afternoon, and the patient seems in every way improved, though the improvement has not been so rapid after the strychnia as on the 7th." After this attack the improvement was maintained. The murmurs had altered somewhat, the systolic murmur being now heard all over the cardiac area, and the diastolic at the aortic cartilage and also at the apex. Fine crepitant sounds were heard over the left lung in front and at both bases behind.

The patient continued to improve daily until the 26th, when the quantity of urine began to diminish and the œdema of the legs and feet to increase. She was now ordered a diuretic mixture of acetate of iron and spirit of nitrous ether in addition to the strychnia.

A few days later there was evidence of some fluid in the abdominal cavity, and the liver became more enlarged and tender. On the 6th July the ascites began to cause some distress, and the patient became slightly jaundiced. On the 9th the distension of the abdomen and the general distress increasing, paracentesis abdominis was performed, and $5\frac{1}{2}$ pints of clear serous fluid were withdrawn. On the 10th and 11th Southey's tubes were introduced into the legs, and nearly six pints of fluid removed. These measures afforded great relief, though the pain in the hepatic region was still severe.

On the 13th, though the breathing was more easy and the pain less, the physical signs were those of increased dilatation of the right heart. Full veins in the neck and a double venous pulse. Epigastric pulsation and a systolic murmur of different character from the apex murmur in the tricuspid area. The subsequent history is that of repeated paracentesis of the abdomen every few days, followed each time by a rally of shorter duration and by greater exhaustion. The patient sank gradually, and died on the 31st.

I have given this case at some length, because, although in the end it terminated fatally, nothing could more strikingly illustrate the value of strychnia in a case of sudden dilatation of the heart during the early days of a case of mitral and aortic disease in which compensation has failed.

Case V.—*Morbus Cordis* (*Aortic and Mitral*).

A. H., aged 55, of a rheumatic constitution, has for several years been troubled with increasing shortness of breath and palpitation, and latterly with inability to lie down at night. In

March 1886 she had an attack of bronchitis, which greatly increased the dyspnœa and cardiac trouble, but she recovered in three weeks and went to see Dr. Habershon in the beginning of May 1886. The heart was found to be much dilated, and with double aortic mischief; the pulse frequent, irregular, and intermittent. She was ordered digitalis with ether, and strict rest in bed was enjoined. Under this treatment she improved very much until June 20. On this date she was taken alarmingly worse. On the 21st she was seen at 4 P.M. by Dr. Habershon in consultation with Dr. Roughton. The pulse was then imperceptible and the breathing laboured. No distinct pulsation could be detected at the heart or definite heart sounds distinguished. There was loss of motor power in the left arm and leg, and the grasp of the left hand was distinctly weaker than that of the right. There had been no loss of consciousness at the commencement of the attack, and it was considered that the symptoms were due to a small embolus, carried probably from the aortic valves into one of the vessels of the brain.

She was then pronounced to be dying, but it was decided as a last resort to try the hypodermic injection of strychnia. At five o'clock $\frac{1}{50}$ gr. of strychnia was injected subcutaneously. At 11 P.M. there was a slight return of pulse, and the patient was more comfortable. The injection was then repeated.

Next morning, the 22d, the patient was much better. The pulse was 120° and distinctly felt, the heart sounds were less confused, and the hypodermic was not given again. There was found to be paralysis of the left arm and leg, no doubt due to embolism.

From this time she slowly recovered and has had no return of such alarming symptoms. The pulse is now quite regular, whereas previous to the attack of June 20 it was very irregular in force and frequency and intermittent. The arm and leg have quite recovered power. The patient has since been able to travel to Bournemouth, and she is now better in every respect.

Dr. Roughton remarks on this case that the strychnia probably acted as a stimulant to the cardiac and respiratory centres, and thus enabled the patient to hold out until the shock caused by the embolus had passed away.

Case VI.—*Mitral Regurgitation.*

E. H., aged 19, under Dr. Andrew's care in Hope Ward, had suffered since the previous December from palpitation and occasional dyspnœa. She was admitted in June. She had never had rheumatic fever, but her symptoms commenced by

an attack of fainting brought on by severe exertion. It was followed by several fainting attacks, and, subsequently, by the symptoms now complained of. A few days before admission she caught cold, and applied at the Hospital on account of the extreme dyspnœa.

There was some lividity of lips and extremities. The breath was short, the respirations about 40, and the pulse frequent and small. The heart was extremely hypertrophied, the impulse heaving, the apex in the sixth interspace in the middle left axillary line, and the apex-beat diffused. The outer margin of the cardiac dulness was rounded, with its natural convexity increased, and extending from the third costal cartilage towards the position of the apex, but bending inwards at the fifth rib in the axillary line.

There was a loud systolic murmur heard over the whole cardiac area, and also over the left back, the point of greatest intensity being at the apex.

The second pulmonary sound was accentuated. Over the lungs, back and front, were bronchitic râles in abundance.

There was some œdema of the lower extremities.

The patient rapidly improved upon ten-minim doses of tincture of digitalis, with ether and sal-volatile every four hours, and two ounces of brandy per diem. The bronchitis cleared up, the pulse frequency was diminished, and the breathing became comfortable.

During her convalescence a letter was brought to her which contained bad news. The result was an attack of syncope, which was of alarming duration. She was given half an ounce of brandy with an ether draught, but no sign of rallying nor of return to consciousness followed. A hypodermic of strychnia ($\frac{1}{60}$ gr.) was then injected, with almost immediate effect. Two or three minutes after the pulse became perceptible, and her recovery was rapid. The patient was discharged about a fortnight later.

Case VII.—*Morbus Cordis* (*Mitral Stenosis*).

M. L., a carman, aged 45, was admitted to Mark Ward under Dr. Andrew on October 28, 1885.

The history of his complaint was that he had an attack of rheumatic fever eighteen years ago, and palpitation of the heart for nine or ten years. He had never been in robust health since. For three months he had suffered from shortness of breath and fluttering of the heart, and for the last fortnight from great palpitation, dyspnœa, and cough.

On admission he was extremely livid, with a livid flush on each cheek, the heart acting very feebly, and pulse at the wrist almost imperceptible and too rapid to count. The chest was emphysematous, but the cardiac dulness much increased to the left, with its apex in the fifth interspace outside the nipple-line. The heart was acting too rapidly for a murmur to be heard. There were no abnormal physical signs in the lungs, and no ascites, jaundice, nor œdema of extremities.

The patient was given brandy and ten-minim doses of digitalis with ether and sal-volatile, with the effect that by the following morning the frequency of the pulse was reduced to 40. The patient was much better, the lividity less, the dyspnœa relieved. The digitalis was now cut off and he was put on Easton's syrup. A long blowing systolic murmur could now be heard, but not with every beat.

He continued pretty well until November 11. The pulse having again become rapid and irregular, he was again ordered digitalis (10 minims three times a day), which reduced the frequency to 56 beats per minute in five days. The murmur was now distinctly presystolic, the first sound also being occasionally obscured.

December 12.—Since the cold weather of the last few days the patient has been faint in the morning, the heart acting very feebly. The murmur is now presystolic, and there is epigastric pulsation. The heart-beats are not so irregular as the pulse. At both bases of the lungs abundant crepitation and rhonchus can be heard, and over the left scapula the breathing is tubular, and the voice-resonance and vocal vibrations increased. The digitalis has been discontinued since yesterday and the patient given four-minim doses of strychnia with ether every four hours.

On the 12th, during an attack of faintness, $\frac{1}{60}$ gr. of strychnia (2 minims) was injected hypodermically, with a rapid improvement in the volume of the pulse and in the symptoms.

At night the patient was again very faint and the pulse extremely feeble. Another subcutaneous injection of $\frac{1}{60}$ gr. of strychnia was given, and he again rallied and slept comfortably all night.

The note on the 13th is as follows:—"Is better this morning. Pulse very irregular, but not so frequent, 72. The lung-signs much the same; the murmur presystolic." The patient improved from this time, and on 25th December was able to be up in the ward. On the 29th the cold was again severe, and the patient seemed to be very sensitive to cold. He again had attacks of faintness, accompanied by an extremely rapid and feeble action of the heart. He was again given digitalis in five-

minim doses. On the 30th there was very little improvement. At night another attack of great feebleness of the heart's action occurred, the pulse being 146, while at the heart 152 pulsations could be detected. The patient was faint, and there was considerable dyspnœa: $\frac{1}{60}$ gr. of strychnia was given subcutaneously, with the result that the pulse became more steady and of better volume. The patient felt better and less faint, and passed a good night, sleeping quietly. The digitalis was continued during the night while the patient was awake, and in the morning, January 1st, the heart-beats were 56 to the minute, while 48 pulsations could be detected at the wrist. There was no faintness, though the pulse was still extremely small. The digitalis was now continued every four hours, and was discontinued on the 19th, with the heart permanently slowed to from 60 to 50 beats per minute, while the pulse varied between 44 and 36. There is nothing further of interest in the case to record, except that on his discharge, February 12th, the frequency of pulsation at the heart and wrist still varied, though less than before. Pulse 44; heart-beats 48.

This case is of especial interest, as showing the value of strychnia in addition to that of digitalis in a case of valvular disease with great feebleness of the heart's action.

PAROXYSMAL HÆMATURIA.

BY

W. P. HERRINGHAM, M.B.

This disease has been called hæmoglobinuria and hæmatinuria by those who desired to express that its characteristic was the passage in the urine of hæmatin, or, as was afterwards discovered, hæmoglobin, without red-blood cells. It has been called also intermittent, recurrent, and winter hæmaturia, and hæmoglobinuria from cold. But none of these points are essential. Blood-cells are sometimes found in the urine of this disease, especially if it be examined when quite fresh. This was first stated by Dr. Wickham Legg in his article on paroxysmal hæmaturia in vol. x. of these Reports. It has been recognised by many since. Dr. Dickinson's post-mortems show also distinctly that blood-cells break out of the capillaries into the kidney tissue, just as in other forms of bleeding. And again, the rapid disappearance of blood-cells from urine containing blood is not confined to this disease. It occurs also in very dilute and in ammoniacal urine. That, secondly, the attack is not always from cold has already been shown by others, and is again proved by a case mentioned in the present paper. The old name, already given to the disease by Dr. Wickham Legg, is therefore the truest as well as the simplest.

During April 1885 Lily H., aged 4½ years, and Mabel, her sister, aged 3½ years, were brought to me at the West London Hospital on account of passing bloody urine.

The mother's story—and she is careful and sensible—was that one night in November 1884 she took them both out of bed to make water, and that they both then for the first time passed urine like porter. The hæmaturia continued for a week, during which they were both kept in bed, and grew listless and ill. At the end of the week the urine began to vary in depth of colour,

and between November and April there had been a constant succession of attacks. The urine was light-coloured in the intervals, which, however, had never been so long as seven days until the week before their first consultation with me. Both children had got thinner and had been weakened by the disease.

For the first attack she could never find any cause, nor had she any idea that they were out of health until the night on which the first red urine was passed. The change of urine was the first symptom noticed. After the first she noticed that cold always brought on an attack. It would be caused by going out, or, when the weather was cold, by merely going into a fresh room; but even keeping them in one room did not wholly prevent it.

They were born at Margate, lived then at Acton, and lastly, when attacked, at Ealing. They had never had ague, and their mother had not heard of any at the places where she had lived.

During their earlier life they had no illnesses except that both had congenital syphilis. The mother had six pregnancies, having had a sore throat and a rash with the first. Both the two first children were premature, one still-born, one surviving six hours only. Lily, the third, suffered with bad snuffles, and had a rash which lasted three weeks. Mabel had no snuffles; both were very delicate. After them was born a bandy-legged boy, now 2½ years old; and, lastly, a baby of seven months, who seems healthy. The children in April 1885 showed no signs of syphilis, but Mr. Raven of Broadstairs, who attended them when infants, was good enough to write to me, "There is no doubt as to the syphilitic taint in the two little girls you mention," and that he had treated them both with mercurial inunction. Further, Lily was admitted into the same Hospital in 1886, under Mr. Vernon, suffering with interstitial keratitis.

In both, the chest and abdomen gave no abnormal signs. Mabel, the youngest, was admitted to the Hospital on April 10, 1885, passing bloody-coloured urine. On the next day it ceased, and she stayed in the ward until May 3, always out of bed, and sometimes out of doors. Between May 3 and May 8 she did not go out, and slept in a bed next the stove in the middle of the ward. On May 7 she went to bed as well as usual, and at 3 A.M. woke up and passed porter-coloured urine. The whole of May 8 she passed urine which was more or less tinged. On May 9 it was clear. From this time she stayed in bed till half-past one on May 11, when she got up. At 3 P.M. on May 11 she passed porter-coloured urine again; but being sent to bed again, the next urine passed was clear, and she had no further attack up to June 8, when she left the Hospital.

Lily, her elder sister, came on May 7. The mother said that a week ago she came out in a rash of dark purple spots. Since the first crop the spots had been coming out continually, but of a lighter colour. During the week she had felt ill; her legs and feet had swollen, and she had had pain in them. On May 7 the legs, buttocks, and arms were covered with a lumpy rash, forming knots under the skin, from the size of a sixpence to that of half-a-crown. In colour the freshest were bright rose, they then faded into purple, and as they faded the lumpiness diminished. The rash resembled an urticaria with large wheals into which blood had been extravasated. There was, however, no sign of scratching. The legs were œdematous.

She was admitted, but passing all urine under her, none was saved. It was dark, and stained the napkins, but was not seen by the House-Physician. Three days later it was natural. At the end of a week the rash had faded.

She continued well up to May 20, having then been out of bed since the 17th. In the evening of May 20 she passed smoky urine. Next morning the urine was of the colour of port-wine, and in the afternoon natural. This was the only attack that she had in the Hospital, and she also left on June 8.

The two children, though very much alike, differed much in complexion. The younger is fair and clear-skinned, the elder much darker, and of a muddier colour. Their general health was good the whole time they were under observation. The hæmaturia had no other effect than to make Mabel black under the eyes.

There was no trace of any general disturbance before or during the attacks, nor could any one watching them tell when a fit was coming on. They did not shiver, they did not turn colour, they did not complain, and their temperatures, taken in the attack, did not rise above the normal. One of the seizures was while in bed during the night.

The urine of the two children differed very much. The elder passed extremely little. In the fourteen days in which the whole could be collected—a deed which was very difficult to perform with either child—the most passed in twenty-four hours was only 16 ounces; the least 11 ounces. This was corroborated by the mother, who said that she had often known her to go from morning till bedtime without passing water.

Her urine was tested on twenty-three days out of twenty-nine. It was always acid, and had a high specific gravity, registering once only below 1020, generally above 1025, five times above 1030. It never contained albumen, save on the 20th and 21st of

May. On the morning of the 20th, before any discoloration was noticed or an attack expected, a trace of albumen was seen in the urine. The discoloration did not occur till the evening. It never contained sugar. If to the boiling urine either strong nitric or strong hydrochloric acid was added, it turned a dark tawny-port colour. The nitric acid caused much effervescence, the hydrochloric none.

Specimens of the urine passed during the single attack was examined spectroscopically and microscopically. It contained the oxyhæmoglobin bands between D and E well marked. I did not look for methæmoglobin. Under the microscope a few white cells, great masses of granular brown deposit, and a little vaginal epithelium were easily seen; but I could see no casts at all until I added a little magenta, when it was easy to see very great numbers. There were also a very few oxalate crystals, but no red-blood cells.

Mabel, the younger, possessed a very different urine. Being the less-educated child, it was still more difficult to collect the whole of her water for the day. When this could be done, the total was generally above a pint, ranging from 19 to 22 ounces. It was faintly acid, had generally a low specific gravity of about 1014, and contained no albumen or sugar. In the paroxysms the urine under the microscope showed here and there what was apparently an altered blood-cell with amorphous deposit. I saw no casts under the microscope, and I did not think of using magenta until after the last of her attacks had occurred. There was a good oxyhæmoglobin spectrum.

An attack occurred in the afternoon of May 11, and it is remarkable that in the afternoon of the same day a haze of albumen had been noticed. No subsequent attack occurred.

I have mentioned these differences in the children, not because I think them important, but to show how unimportant they are.

The children were brought to me again in November 1885. No attack had occurred during the summer, but the mother had noticed that Mabel, when cold, "came out all over bumps like nettlerash." She had had a paroxysm of hæmaturia shortly before coming under my care. I put her upon mercury ointment — having in the meantime read Professor Murri's writings — and Lily, the elder, upon small doses of quinine and iron. The mercury was continued until the child became very pale and complained of her teeth being tender. Two attacks occurred during its administration, whereas Lily had only one. It was left off, and quinine with iron given to both. Both had another paroxysm during January. I have not seen them since March 1886. It is remarkable that this

winter (1885–86), though far colder, produced less hæmaturia than the former. The attacks seem to be diminishing.

There are several peculiarities in these cases. Firstly, they are both very young. The majority of cases are considerably older. It is not, however, very uncommon in young children. Four of Dr. Dickinson's cases were under five years old. Secondly, though not so rare in females as was at first believed, it is vastly commoner in males. Of fifty-two other cases whose details are known to me, only seven were females. Thirdly, in no other case yet recorded have two members of the same family been attacked with the disease in a typical form.[1] Fourthly, it is decidedly uncommon, though not unknown, for the attacks of hæmaturia to be unaccompanied by any sign affecting the general health. Fifthly, it is difficult to understand why, in a case where, as here, the paroxysms were clearly caused by cold, they should also come on while the patient was in bed. The children may have thrown off their clothes and so become chilled, but of this there was no history. Lastly, the affections of the skin are worth remark. Urticaria—that is, a local effusion of clear serum—has been noticed in several cases before. Purpura, or extravasation of blood in the skin, is also spoken of in a few cases. In one case Dr. Dickinson, judging by touch but not by sight, believed that he noticed effusion of blood into the joints. The eruption on Lily, which, save for the absence of itching, answers to the description of *purpura urticans*, was a link between the simple urticaria and the effusions of blood.

Up to the last few years, paroxysmal hæmaturia, however difficult to explain, was believed to be a disease whose exciting cause was cold, and cold alone. This is now known not to be the case. In persons who enjoy health during the intervals, two other causes may produce the attacks. The first, mental worry or emotion; the second, fatigue. In 1879 Dr. Druitt—himself a sufferer—wrote:[2] "The most efficient cause is mental worry or exertion; an annoying letter or a game of chess might bring on an attack in a quarter of an hour." Cold was by him placed only second in its power to produce the fit. I know a medical man, well known and loved by many of us now walking this Hospital, who, to many other good qualities, joins great modesty. Before nearly every professional examination that he has undertaken, he has had overnight an attack of shivering, and in the morning has passed a clear urine the colour of red wine. I have never been able to examine his urine, and he has now unfortunately passed all his trials; but from his history and opinion

[1] Dr. Saundby's case is discussed later.

[2] Medical Times and Gazette, 1879, i. 215.

it is quite clear that he has had real paroxysmal hæmaturia. Unlike Dr. Druitt, he is quite insusceptible to the action of cold, and I have iced his fingers after the manner of Boas without producing the slightest effect except upon his temper.

In 1881 Fleischer published a then unique case in which fits of hæmaturia of the typical character were produced in a young soldier by long marching. No other cause could be assigned for the first or any subsequent attack. A long walk could always be relied on to produce a fit; but neither cold nor heat, nor overwork of the kidneys caused by drinking large quantities of liquid, nor—which is to be borne in mind—muscular exertion other than walking had any influence. The urine in the fits contained hæmoglobin, but no red cells, and in the intervals was natural. There were no general symptoms. Strübing in 1882 published a similar case, and Kast in 1884 a third.

Besides those cases in which an attack is produced, though not by the usual, yet by a definite exciting cause, there is a rarer sort in which, after injury, the patient becomes liable to attacks of paroxysmal hæmaturia. The case recorded by Rosenbach, in which the disease came on in a boy of seven after a fall from a cart, is so far like the ordinary cases that it was produced by cold, and there is, therefore, no proof that the fall caused the susceptibility. Neale, however, in 1879 described a typical case of this class. A man of thirty-one, perfectly healthy till March 1878, was in that month severely hurt in the back. From that time he noticed that he would at times pass porter-coloured urine, and six months later came to the Westminster Hospital for lumbar pain and tenderness. He was found at times to pass urine in which there was hæmoglobin, but no red cells. Intervals of perfectly natural secretion intervened. At this time he had no warning by any general symptom when the abnormal urine was about to be passed, but during his stay in the Hospital he had three unexplained rigors with high temperature, two of which passed off without any further symptom, but the third was accompanied with the paroxysm of hæmaturia. At the time of his admission he had loss of sexual desire, but no other symptom pointing to a lesion of the cord; later he was found to have prominence and tenderness of the lumbar vertebræ.

Another class of cases is that in which the symptom which gives its name to this paper occurs as a part of Raynaud's disease. This disorder is characterised by local cyanosis and stagnation of the blood, often of such severity as to cause gangrene. The first case in which this was known to be accompanied by hæmaturia with hæmoglobin, but without red-blood cells, was one under Dr. Wilks, published in 1879. A boy suffering with hip-disease lay

in a condition of great cyanosis, especially marked in his hands, nose, and ears; the parts, that is, where in all people the circulation is weakest, and where in the cold fits generally preceding paroxysmal hæmaturia cyanosis most commonly shows itself. This led to gangrene of his nose, ears, and fingers. His urine contained hæmoglobin many times, but only once were any red cells seen.

Another case was read by Dr. Southey to the Clinical Society, and probably many of those who read this paper remember to have seen the patient, a boy of nine, in Matthew Ward. Dr. Barlow also read a similar case to the same Society.

These cases, though apparently very different, may without much difficulty be connected with the ordinary form of the disease produced by cold. The heat of any part of the body depends first upon the constant passage of warm blood through it, and then upon the chemical reactions which take place within it between the blood and the tissues. If the blood within it be kept stagnant, as is the case where a part is cyanosed, both these sources of heat very quickly cease, for not only will no fresh blood be poured into the part, but that which is already in it will have soon fulfilled all the chemical functions of which it is capable. The part will then gradually take the temperature of its surroundings, which in the extremities or on the surface will be that of the surrounding air; and so in the cyanotic parts the blood may become as cold as any sudden outside chill can make it.

Leaving, however, these abnormal cases for the present, there is a point of considerable interest still to consider in the typical cases of paroxysmal hæmaturia which are caused by cold. Most English writers have considered the disease to be akin to malarial affections, whereas Murri of Bologna is strongly of opinion that the disease is syphilitic.

For the malarial view there are several arguments to be urged. In the first place, the attack itself is in typical cases strikingly like an ague fit. Next, several of the cases described in England have either had ague or have been in the way of contracting it. Thirdly, by English writers, notably by Dr. Druitt, quinine has been lauded as the only drug likely to be of service.

All these grounds are contested. It is urged that in ague the characteristic is the period, while paroxysmal hæmaturia has no period, but is entirely dependent on outside causes. We do not, however, profess that paroxysmal hæmaturia is ague, but that it occurs in those who have imbibed the ague poison; and it is to be remembered, firstly, that some cases are distinctly periodic (Roberts, Cases 2 and 3, 3rd edit.); and secondly, that persons

who have had ague often preserve long after leaving places infected with ague poison a liability to occasional ague fits produced by cold or other causes, just as paroxysmal hæmaturia may be produced.

Next it is said that a great deal too much stress has been laid upon the cases which have had ague, and that they are a very small proportion of the whole. This is, I think, true. I have classed in the following table all the cases[1] occurring since vol. x. of these Reports was published, which I myself have read. Of 45 males, 8 only had had ague, 10 had never had it; in 18 the point is not mentioned, and in 9 it was doubtful. Of 7 females, 1 had had ague, 2 had not; in 2 it is not mentioned, and in 2 it was doubtful.

Nor, again, is it allowed that quinine is the best drug for paroxysmal hæmaturia. Murri claims that the only cures have been produced under mercury. It appears that in our cases, which form by far the most of those yet recorded, quinine is, though not always, yet more often of value than any other single drug. Not many of us, I fancy, have treated cases with mercury. In my cases, in which I confidently expected it to succeed, I had no reason to think it of the slightest use, though Götze, who had a case very like mine, cured his patient with it. For the present, then, I expect we shall believe our eyes rather than our ears, and give quinine the preference. At any rate, the argument for malaria does not lose from the effect of this drug.

These, however, are not all the reasons which have led the English to think paroxysmal hæmaturia a malarial disorder. It has long been known that in severe malarial disease the patient was subject to attacks of hæmaturia. These were distinguished from the attacks of paroxysmal hæmaturia by the presence of blood-cells in full quantity. Dr. Jones in 1878[2] describes these cases and their post-mortem appearances, which latter are indistinguishable as to the kidneys from Dr. Dickinson's cases of paroxysmal hæmaturia. I have before alluded to Dr. Saundby's case, described by him as continued hæmoglobinuria, and referred to by him as one of paroxysmal hæmaturia. He was called to see a young man who had a very large spleen, and who was passing porter-coloured urine containing *blood-casts*. He had a high temperature at the time. No mention is made of any subsequent examination of the urine. He was said to have passed dark-coloured urine from his birth. His father died with a spleen weighing 7½ lbs., and was said to have passed urine similar to the son's. A sister, not seen, was said to pass dark-coloured

[1] All the cases, that is, which are caused by cold.

[2] New Orleans Med. Surg. Jour., abstract in Med. Rec., 1878, 168.

urine whenever she gets out of sorts. This description is not that of a case of paroxysmal hæmaturia, and considering the presence of blood-casts, I do not see why it should be called hæmoglobinuria. There is no reliable evidence given that either father or sister suffered with the disease. It has been too hastily accepted.[1] I mention it here because it reads very like the cases described by Jones. These are not any evidence that paroxysmal hæmaturia is malarial; but between paroxysmal hæmaturia where the blood-cells break up quickly and malarial hæmaturia is a middle class of cases described by Corré in 1881, and also by Karametsa in 1882, wherein the red cells are not to be found, though the urine contains hæmoglobin. I should have been glad if Corré in his excellent account had described the disease itself as it affects the patient. He puts that, however, aside as too well known,[2] and devotes his paper to stating that, though it is undoubtedly malarial, it yet is not found in all malarious countries; and that though quinine has sometimes, it by no means always has an effect upon it. He speaks of it as the *fièvre bilieuse melanurique ou hématurique des pays chauds.* Karametsa has written a very interesting pamphlet giving several cases of the disease. According to him, it is obviously malarial; it is often accompanied with great jaundice, and it is provoked by cold. The urine sometimes contains a few blood-cells, but generally none. It contains cylinders, both granular and hyaline, as in cases of paroxysmal hæmaturia.

This affection forms a stepping-stone from malaria to paroxysmal hæmaturia which cannot but have great weight in the argument.

So far from allowing statistics to tell for malaria, Murri employs them to prove syphilis a predisposing cause of paroxysmal hæmaturia. There appears to be a real similarity between the behaviour of syphilitic blood and of the blood of patients with paroxysmal hæmaturia, in that both when put in a test-tube and chilled give up hæmoglobin into the serum far more readily than healthy blood. The latter requires to be frozen and thawed several times before the serum is coloured. With this *à priori* ground it becomes important to test the numbers. Of the 45 male cases, 16 had had syphilis, 13 denied it, and in 15 it is not mentioned. Of the 7 females, 2 had had it, one was doubtful, and in 4 it is not mentioned. These are not very striking numbers, but they should be allowed their weight, and the addition of my two little girls makes a high average on the female side at least.

[1] Dr. Saundby gives a wrong reference to a second case published by himself. This second case I have never been able to find.

[2] Bérenger Feraud, Paris, 1874, is the chief French book upon it.

Males.

No.		Age.	Age.				Syphilis.			
			Not mentioned.	Doubtful.	No.	Yes.	Not mentioned.	Doubtful.	No.	Yes.
1	Roberts, Urinary Diseases, p. 144, 3d ed. . . .	23	...	...	×	...	×	...	...	...
2	... ...	...	×	...	...	...	×	...	...	...
3	... ...	32	...	...	...	×	×	...	...	...
4	Dickinson, Ren. Affect. pt. iii.	45	...	...	...	×	...	...	...	×
5	... ...	42	...	...	...	×	...	...	×	...
6	... ...	34	...	×	...	...	×	...	...	...
7	... ...	46	...	...	...	×	...	...	...	×
8	... ...	...	...	...	×	...	...	...	...	×
9	... ...	5	...	...	×	...	...	...	×	...
10	... ...	28	...	×	...	...	...	...	×	...
11	... ...	46	...	×	...	...	...	...	...	×
12	Cf. Stone, *M. T. & G.* 1880, i.	28	...	...	×	...	...	...	...	×
13	... ...	25	...	...	...	×	×	...	...	...
14	... ...	48	...	...	×	...	...	...	×	...
15	... ...	16	...	...	×	...	...	...	×	...
16	... ...	42	...	×	...	...	...	...	×	...
17	... ...	27	...	...	×	...	...	...	×	...
18	Murri, Emoglob. da Freddo.	58	...	×	...	...	...	...	×	...
19	... ...	41	×	...	...	...	...	...	...	×
20	„ quoted from Cantani	...	...	×	...	...	×	...	...	...
21	„ quoted from Spadini	...	×	...	...	...	...	...	...	×
22	Grainger Stewart, *B. M. J.* 1878, ii.	37	...	...	...	×	×	...	...	...
23	Jones-Morris, *B. M. J.* 1883, i.	10	×	...	...	...	×	...	...	...
24	Mackenzie, *L.* 1879, ii. .	4	×	...	...	...	...	...	...	×
25	„ *L.* 1884, i. . .	13	...	...	×	...	×	...	...	...
26	„ „ . .	55	×	...	...	...	...	...	×	...
27	... ..	51	×	...	...	..	...	...	...	×
28	Charteris, *L.* 1879, ii.	30	...	...	×	...	...	...	×	...
29	Strang, *L.* 1879, ii. . .	...	...	×	...	...	×	...	...	...
30	Forrest and Finlayson, *Glasgow Med. Jour.* 1879 .	30	×	...	...	..	...	...	...	×
31	Lichtheim, *Volkmann's Sam. klin. Vortr.* 1878, No. 134	43	×	...	...	...	×	...	...	...
32	... ...	13	×	...	...	...	×	...	...	...
33	... ...	70	×	...	...	...	×	...	...	...
34	Beale, *Med. T. and G.* 1875, i.	...	×	...	...	...	×	...	...	...
35	Nothnagel, *Med. T. and G.* 1884, ii.	...	×	...	...	...	...	...	...	×
36	Boas, *D. Arch. f. kl. Med.* xxxii.	21	×	...	...	...	...	...	...	×
37	Kobert and Küssner, *Berl. kl. Woch.* 1878 . .	34	×	...	...	...	...	...	×	...
38	Küssner, *D. med. Woch.* 1879	59	...	...	...	...	...	...	×	...
39	Orsi, *Gaz. Med. Ital. Lombardia*, 1878 . . .	39	×	...	...	...	...	...	...	×
40	Henrot, *Prog. Med.* 1884[1] .	32	...	×	...	...	...	...	...	×
41	... ...	35	...	×	...	...	×	...	...	...
42	Paetsch, *Berl. kl. Woch.* 1881	33	×	...	...	...	...	...	...	×
43	Mesnet, *Arch. gen. de Med.* 1881	37	...	...	×	...	...	...	...	×
44	Clément, *Lyon Medical*, 1880	25	×	...	...	...	×	...	...	...
45	Morrill, *Bost. M. S. J.* 1882	39	...	...	...	×	...	...	×	...

[1] One of these cases—it is not said which—had lived in West Africa.

FEMALES.

No.		Age.	Ague.				Syphilis.			
			Not mentioned.	Doubtful.	No.	Yes.	Not mentioned.	Doubtful.	No.	Yes.
1	Dickinson	32	...	...	...	×	×	...	...	...
2	... ...	3	...	...	×	...	×	...	...	...
3	... ...	9	...	×	...	...	×	..	...	...
4	... ...	5	...	×	...	...	×	...	...	...
5	Adam, *Glasg. Med. Jour.* 1879	11	×	...	...	...	...	×	...	...
6	Ehrlich, *D. med. Woch.* 1881	27	×	...	...	...	...	...	...	×
7	Götze	9	...	...	×	...	...	...	...	×

Probably both views are partly right, and the dispute will turn out to concern distant causes only, the immediate cause being some change common to both.

It cannot be said that we yet know accurately what takes place in a paroxysm. After a patient has been exposed to cold, the parts in which the circulation is weakest—which are also, as it happens, the parts most exposed—nose, ears, hands, and feet become blue. This means, no doubt, a local stagnation of blood; but is it a merely local stagnation, or is it a change general over the surface, which shows its effects most in the weakest parts?[1] and is this weakness a natural slowness of circulation there, or a readier shedding of heat, which itself produces the stagnation? Locally, then, at any rate, and perhaps generally, the skin-vessels are contracted, and in parts so much, that, as in gangrene, no blood passes through the artery, and the backward pressure keeps it stagnant in the capillaries and veins. It is thus all the longer exposed to the cold, and under this strain the red cells in the stagnant blood break up and discharge their hæmoglobin into the serum. That this happens in the stagnant parts was proved by Boas, who, cutting off a finger by ligature from the general circulation, chilled it in ice-water, and found the cells altered in its blood, and yet normal in the unchilled finger next it. No one has better described the tender red cell as it enlarges and melts down than Dr. Druitt.

To talk, however, of the tender red cell is not to explain it. We have no knowledge whatever of the source of its fragility. It may be that the cell itself is faultily turned out from its first production, or it may by some fault in its life acquire an unhealthy deli-

[1] That they are the weakest parts, the first cold day will convince every one.

cacy. It may even be that the serum, and not the cell, is altered, and possesses in certain states some property to dissolve the cell within it. It is already known that the serum of many animals is antagonistic to the blood-cells of others, and that if the blood of one is transfused into the vessels of the other, the cells break down, and their hæmoglobin is dissolved in the serum. In man artificial hæmoglobinuria is thus produced by the transfusion of lamb's blood. It is possible that during the local stagnation a change occurs in the serum, which enables it to dissolve even the cells of its own species.

From the cyanotic parts the blood-stained serum passes into the general circulation. It has been found there by Boas and Küssner, who obtained it from blood taken by a cupping-glass, and by Murri, who obtained it from a blister. If there is much of such serum—if, that is, the fit is a severe one—the liquor sanguinis leaking into the tissues is dark enough to stain the patient yellow, and he becomes, as is commonly said, jaundiced.[1] If the fit is less severe, the serum is not dark enough to produce the staining.[2]

In both cases the main channel of elimination is the kidney. With this we come to a second factor of the disease, the alteration of the renal vessels. It was to be expected that during contraction of the vessels of the surface the pressure upon the renal vessels would be increased. The exact results were, however, first shown by Dr. Dickinson's post-mortems—vessels choked with blood, extravasations into the tubes and into the interstitial tissue. In one remarkable but complicated case, rupture took place of the capsule of the kidney itself, with hæmorrhage into the tissues surrounding it.

I have before said that these post-mortems seem to me to throw a new light on the disease. After them it is impossible

[1] Hæmatoidin, which is formed by the decomposition of blood in extravasations, is probably identical with bilirubin.

[2] It appears to me probable that malarial jaundice, when it occurs, is due, not to bile from the liver, but to altered hæmoglobin from the blood. Karametsa agrees with me in this opinion, so far as concerns the fièvre bilieuse hématurique, about which he writes: "In my opinion," he says, "the morbific cause of what is called bilious hæmaturic fever acts primarily, not upon the liver, but upon the blood, and begets a disease which is not to be classified with bilious disorders, but with the blood-poisons (δηλητηριάσεις), bringing with it a great destruction of red-blood cells and separation of much hæmoglobin, from which latter arises now hæmoglobinuria, and now, if more red cells are destroyed, hæmoglobinuria and hæmic jaundice. On this account this fever, speaking accurately, should not be called jaundiced or bilious, nor hæmaturic, but more rightly, and with more relation to the origin of the disease, 'malarial hæmoglobinuria.'" He thinks, however, that there is sometimes real biliary jaundice as well; but inasmuch as hæmatoidin is indistinguishable from the bile pigment, I think the whole may be due to hæmoglobin from the blood and its derivatives.

to lay much stress upon the absence of blood-cells in the urine. There is no doubt that red cells break down in the vessels of the surface, but there is no doubt also that hæmorrhages of ordinary blood-cells are seen in the kidney. From the renal vessels, then, are effused both blood-stained serum and blood-cells. If these latter do not appear in the urine, it is because they yield to some dissolving power of the urine itself, or of the serum which it contains.

I conjecture, therefore, that paroxysmal hæmaturia from cold, bilious hæmaturic fever, and malarial hæmaturia, are analogous diseases: that in each the blood-cells break up within the vessels, and the bloody serum is extravasated into the tissues, causing jaundice, and into the kidneys, causing hæmoglobinuria: that in all three the kidneys are the seat of two sorts of extravasation, the one that of blood-stained serum, common in these diseases to the kidneys with the other tissues, the other that of blood-cells, resembling ordinary hæmorrhage in its character, and produced by the ordinary cause of intense pressure: that in all three the results of both extravasations may appear in the urine, but that while in the severe disease called malarial hæmaturia blood-cells are so numerous as to mask the free hæmoglobin, this last forms the main feature in the two slighter affections: that in paroxysmal hæmaturia the seat of the blood-solution is in the cold parts, but is unknown in the other two forms.

In the state which we call health remarkable analogies with this disease, whose chief causes are cold and mental emotion, appear. The influence of cold upon the secretion of urine is in every one's experience. When it is severe, as in bathing, it sometimes produces temporary albuminuria; a step farther gives paroxysmal hæmaturia. In all these cases the alteration in the urine is the result of an increased pressure on the kidney-vessels caused by the contraction of the arteries of the skin; the skin and kidneys forming a balance in the body, each compensating the action of the other. In my cases, and when fits were artificially produced in some others, albumin was noticed to occur before any hæmoglobin appeared. This is the stage of rising pressure; and it is probable that if these children had had severe fits, this stage would have so quickly passed that no urine would have been excreted during it. A slight fit means a slow first stage, which renders a previous albuminuria easy to detect. Again, the commonest symptom of nervousness is increased secretion of urine; mental strain of a severe order, as in candidates up for a stiff examination, produces temporary albuminuria in 10 per cent. of the men.[1] A step farther gives the case

[1] Clin. Trans. xvi. 62; Sir A. Clark.

which I have described on p. 137.[1] Again, I have above quoted cases in which the fit was caused by marching. Here too an analogy is ready; for Leube has found temporary albuminuria to be produced by long marching in a considerable number of young soldiers.[2] But while those cases which we call physiological or healthy can be explained by alteration in the vessels or in the blood-pressure alone, in the disease I am considering the blood contained is also changed.

These changes in the blood-pressure are in paroxysmal hæmaturia exceedingly severe. How great the pressure must be may be seen by the descriptions given above of the tissues after death. But in thinking over them the question arises, if lesions of such violence occur often, will they always pass away and leave no trace? Is paroxysmal hæmaturia a disease which always leaves the kidneys healthy, and which does not permanently alter their structure? No proof that it does has yet been given. It would be very difficult to give even such a one per cent. solution of proof as we are accustomed to put up with. It is to be remarked however that ague, in which a similar state of kidney is produced, is probably, though rarely, a cause of granular nephritis. In Dr. Dickinson's cases of paroxysmal hæmaturia one man died of very violent acute nephritis; another man, who had been free from it for four years, died with granular kidneys; a woman who had this among other symptoms of a very acute illness died with nephritis, and a man, the reason of whose death is not stated, had, besides intense partial injection, "hypernucleation of the interstitial tissue." One of Professor Murri's patients had tubercle of the kidney, and cannot therefore be quoted; the other showed renal cells swollen and granular, with alteration of the nuclei, and here and there increase of connective tissue.

There is some analogy in an experiment of Stokvis. He "has shown that hemialbumose injected under the skin once or twice will pass out through the kidneys without doing them any apparent injury, but if the injections be frequently repeated, the hemialbumose in passing through the kidneys appears to excite in them organic disease." [3]

The same thing has seemed to me possible in certain other cases of paroxysmal hæmaturia which have been under my own care. I have had a man aged 40 under me with a large amount of albumin in his urine, who gave me a fairly distinct history of paroxysmal hæmaturia in his boyhood and youth. Last winter,

[1] Roberts, ed. iii. p. 138, and Dickinson, pt. iii. p. 1286, give instances of hæmaturia from emotion.

[2] Lehre vom Harn, p. 369.

[3] Quoted from Brunton's Disorders of Digestion, p. 38.

a woman aged 35 came into my room with the appearance of renal disease. I sent her into the next room to pass water, and she brought me back urine the colour of port-wine. Examining it a few hours later, I found only one or two blood-cells. She said that she had had two or three such attacks during the last eight months after getting very cold, and that she had been shivering with cold while waiting to see me. I supposed at the time that the appearances of nephritis were produced by the chill, but for the few weeks she continued under my care she always passed an albuminous urine, and she still had the pale puffy face, the hard pulse, and the swollen legs which first aroused my suspicions.

Dr. Forrest's case showed a distinct history of this connection. At first the urine was quite natural in the intervals, but albumin gradually became more persistent, until, eighteen months after the beginning of the disease, it is "found after meals, but usually absent from that passed on getting up."

With this, too, must be compared Lépine's case of chronic renal disease. The man, aged 40, was admitted with uræmic poisoning. He gradually recovered from this, but while in hospital passed, at night alone, hæmoglobin without cells in his urine. He had no rigors or general symptoms.

While, therefore, it is certainly possible to become free of the disease altogether, and while it in most cases leads to no permanent damage of the kidney, it is possibly in others a cause of, as it is certainly coincident with, acute or chronic nephritis.

It appears, then, on looking over the facts as cited—

1. That there are not one, but many causes of paroxysmal hæmaturia.

2. That in the disease when produced by cold there seem to be two factors—one an alteration in blood-pressure like that caused in other states, both of cold and of malaria; the other a change in the blood. This latter, I expect, will also be found to have analogies in ague.

3. That free hæmoglobin occurs in the urine from many other causes—emotion, walking, injury, Raynaud's disease, nephritis, and malaria.

4. That where there is a history of syphilis, mercury often, but not always, cures; and where there is a history of ague, quinine is the best drug to use.

5. That the disease may be cured, may leave off, or may persist; and that it is not without some danger to the kidney structure.

I have added a list of papers that I have read, which have been written since Dr. Legg's paper, hoping to save trouble to those who will write after me.

Treatises—

Roberts. Urinary and Renal Diseases, ed. iii. 1876. With cases.
Druitt. Med. Times, 1879, i. 215.
Saundby. Birmingham Med. Review, xi. 97.
Murri. Emoglobinuria da Freddo. Bologna, 1880.
Corré. Arch. de Med. Nav. Marseilles, 1881, 161. Fièvre bilieuse melanurique ou hématurique des pays chauds.
Karametsa. περὶ τοῦ ἑλώδους αἱμοσφαιρινουρικοῦ πυρετοῦ. Athens, 1882.
Boas. Deutsch. Archiv. f. klin. Med., 1882, xxxii. 355.
Murri. Emoglobinuria e Sifilide. Bologna, 1885.
Dickinson. Renal and Urinary Affections, part iii. 1885. With many cases.

Cases from Cold—

Beale. Med. Times, 1875, i. 440.
Kobert and Küssner. Berl. klin. Woch., 1878, 635.
Lichtheim. Samml. klin. Vorträge, 1878, No. 134.
Grainger Stewart. Brit. Med. Jour., 1878, ii. 103.
Orsi. Gazz. Med. Ital. Lombardia, 1878, 3. For p.-m., see Murri, Emog. da Freddo.
Forrest. Glasgow Med. Jour. 1879, xi. 421.
Adam. Do. do.
Küssner. Deut. med. Woch., 1879, 475.
Charteris. *Lancet*, 1879, ii. 306.
Strang. Do. 1879, ii. 367.
Mackenzie. Do. 1879, ii. 116.
Rosenbach. Berl. klin. Woch., 1880, 132.
Stone. Med. Times, 1880, i. 176.
Clément. Lyons Méd., 1880, xxxiv. 84.
Ehrlich. Deut. med. Woch., 1881, 225.
Paetsch. Berl. klin. Woch., 1881, 42.
Mesnet. Arch. Gen. de Med., 1881, i. 513.
Morrill. Bost. Med. and Surg. Jour., 1882, 108.
Jones-Morris. Brit. Med. Jour., 1883, i. 557.
Mackenzie. *Lancet*, 1884, i. 156.
Nothnagel. Med. Times, 1884, ii. 425. A reported lecture.
Henrot. Prog. Med., 1884, 800.
Götze. Berl. klin. Woch., 1884, 716.

Cases after Injury—

Neale. *Lancet*, 1879, ii. 725.

Cases with Raynaud's Disease—

Wilks. Med. Times, 1879, ii. 207.
Southey. Clin. Trans., xvi. 167.
Barlow. Do. 179.

Cases from Fatigue—

Fleischer. Berl. klin. Woch., 1881, 691.
Strübing. Deut. med. Woch., 1882, 1.
Kast. Deut. med. Woch., 1884, 840.

Doubtful Case—

Saundby. Med. Times, 1880, i. 476.

Case of Hæmoglobinuria with Renal Disease—

Lépine. Revue Mensuelle, 1880, 722.

PRELIMINARY SCIENTIFIC TEACHING AT ST. BARTHOLOMEW'S.

BY

THOMAS W. SHORE, M.D., AND F. WOMACK, M.B.

There has recently been much discussion as to how much, if any, instruction in general scientific subjects should be given to medical students, and where and how this instruction should be imparted. Thinking that an account of the preliminary scientific teaching given in our Medical School may be of interest, we venture to write this short paper; and we hope that our opinions, founded on our own experience in the teaching of science at a medical school, may be of some value in deciding the question of the teaching of science *preliminary to medicine*. Our experience is solely that of teaching the students of the class for the Preliminary Scientific (M.B.) Examination of London University.

Three years ago, the character of this examination was remodelled by the Senate of the University, the alterations affecting chiefly the biological subjects of zoology and botany. The old plan upon which the examinations in these subjects were conducted, arose from the old idea of imparting instruction on a plan essentially classificatory. The knowledge acquired in this way was diffused over a large range of topics, but was extremely superficial, and of late had been found to have degenerated into mere cram. Hence arose the idea of taking types of the more important large groups of animal and vegetable life, and insisting that each student should become practically acquainted with the *details* of the anatomy and physiology of a few types, rather than have a theoretical knowledge of a much wider range. This plan of teaching had for some years been found to be of very high value in the laboratory of Professor Huxley, and some ten years ago was introduced into the curriculum for the Intermediate B.Sc. Examination of London University. Three years

ago, it was decided to extend this, which had been found to work well, to the Preliminary Scientific Examination; for although the examination in zoology had been remodelled a year or two previously, the examination in the subject of botany was still conducted, to some extent, on the old system. Three years ago, therefore, botany and zoology were placed together under the name of "biology," and the examination was arranged on the plan of the new method of teaching by the "type system." Corresponding with this change, greater importance was attached to the *practical parts* of the examination in chemistry, and the examination in physics was arranged so as to render *practical* knowledge of this subject desirable.

This is not the place to discuss the merits of one system over the other, but it may be mentioned that, at the last meeting of the British Association for the Advancement of Science, the subject was fully discussed in the Biological Section, the balance of opinion being decidedly in favour of some form of the "type system." The extension of the practical character of the Preliminary Scientific Examination of London University was soon followed by the authorities at Cambridge in their corresponding examination, the first M.B.

The examinations having thus, rightly, assumed a more practical character, the difficulties of imparting knowledge to a large body of students have become increased. There has arisen the necessity for laboratories, properly fitted up for practical work in biology, physics, and chemistry, sufficient to enable each student to work over all the matters required. To provide the necessary room in the London medical schools has become a very pressing question. In view of these practical difficulties in imparting the necessary instruction, there arose the question of whether the preliminary scientific teaching should still be carried on by the medical schools, or whether it should be relegated to a few special schools of science, through which the student should pass before entering at a medical school.

This is the question which is still far from settled, and it is this question which we propose to deal with in this paper. We intend to show what sort of instruction can be given, and what arrangements for teaching can be made, and with what results, at our Medical School; and we shall bring forward very strong evidence to show that, as far as concerns St. Bartholomew's, *the science preliminary to medicine* should continue to be taught at a medical school.

There are two principles which seem to be fully and generally recognised, viz.—(1.) That medical students (at any rate those for University degrees) should be instructed in the elements of

biology, chemistry, and physics. (2.) That this instruction should be imparted before the students begin their anatomical, physiological, and purely professional studies.

The ideal, aimed at by some, is that the student should come to the Medical School fully equipped with the above scientific knowledge and passed through the Preliminary Scientific Examination. Can this ideal be easily attained in the present state of affairs? We cannot see how. Certainly in the present condition of general education it cannot be effected by teaching science to the intending medical student whilst still at school. The alternatives then are—(*a*) The formation of intermediate schools of science for students intending to enter to medicine; (*b*) the establishment of *special preliminary scientific departments* in connection with the medical schools, through which the student should pass before beginning anatomy and physiology. In deciding this question, we must remember that we are dealing with students *intending to enter on the study of medicine*, not with students of science, pure and simple. Science should be taught in one way to students aiming at a purely scientific career, and in another way to those who are intending to enter the medical profession. Biology, chemistry, and physics should be taught to intending medical students, particularly *in their bearing on medicine*, and only to a limited extent.

At present, we have no college devoted entirely to the teaching of the preliminary sciences as they bear on medicine. Had we such a college or colleges, the ideal of some would be realised; but all existing scientific colleges have a different object in view. They are in no way under the management of those who have any knowledge of medical education, and they have curricula unadapted to medical students. We feel very strongly that the biology, chemistry, and physics, *as they bear on medicine*, should be taught to intending medical students under the management of the authorities of the medical schools, and by special teachers, who have had a medical as well as scientific training. They are in the best position to judge to what extent, and how, preliminary science should be taught. In our opinion the preliminary sciences ought to be regarded as a part of the special training of medical students, just as much as anatomy and physiology are. It seems to us that they are in quite a different category to the subjects required in matriculation and other examinations in Arts. They are an *integral, though preliminary* part of the medical training, and the teaching of these subjects, as they bear on medicine, forms a portion of the duties and obligations of the authorities of the medical schools. We think, therefore, that there should be established at the medical schools *special*

preliminary scientific departments, through which the students for University degrees should pass before entering on their anatomical and physiological studies. *Students in this department should be precluded from the future studies, till they have passed their examination in preliminary science.*

If some such scheme as this were adopted at St. Bartholomew's, we think it would prove very attractive to students. We have at our school, in the shape of our preliminary scientific class, the materials from which a first-rate *department* of this kind might be developed. The work which is being done in this class is already of a high order, and is deserving of more recognition than it receives. As it is, it is the means of securing the entry at our school of a considerable number of students per annum, who would probably not otherwise enter here, and, by imparting sound scientific knowledge, is the means of improving the future career of the students in their purely professional education. No doubt the number of students entering for the Preliminary Scientific at the smaller medical schools is not sufficient to justify the establishment of special preliminary scientific departments and the appointment of special lecturers; but this cannot be the case at St. Bartholomew's. We have under instruction in the preliminary scientific class, either for the January or the July examination, a large number of students annually. In a *special department*, with a curriculum specially adapted to the requirements of medical students, we believe that this number would soon be doubled; but in order to so far develop the scheme, special accommodation must be provided.

In order to show the character of the work done in our preliminary scientific class, we will state the result of the last two years of our work under the revised system of the University, and then give a short account of the arrangements for teaching by which we are able to secure these results.

In July 1885 twenty students entered from St. Bartholomew's for the Preliminary Scientific Examination in all the subjects; of these, 13 passed; 1 entered for biology and chemistry, and passed; 1 for biology and physics, and passed; 1 for biology only, and passed. Thus, of 23 who entered, 16 were successful, *i.e., about 70 per cent.* In January 1886, 3 entered for the whole examination, and 2 passed; 2 for chemistry and physics, and 1 passed; 3 for biology and chemistry, and all passed; 3 for chemistry only, and passed; 1 for physics only, and passed; 2 for biology only, and 1 passed. Thus, out of 14 entries, 11 were successful, *i.e., 79 per cent.* In July 1886, 14 entered for the whole examination (Preliminary Science and Intermediate Science), and 9 passed; 3 for biology and physics, and passed; 3 for biology and chemistry, and

passed; 1 for biology and physics, and passed; 1 for physics alone, and passed; 1 for chemistry alone, and passed; 2 for biology only, and 1 passed. So that of 25 who entered, 19 passed, *i.e.*, *76 per cent.* The average result for the two years is, therefore, *75 per cent.* successful. This compares very favourably with the average percentage of successes as stated by the University, which is about 50 per cent.

There is another way of gauging the effect of the preliminary scientific teaching at St. Bartholomew's. The character of the scientific teaching is bound to have an effect on the future career of the students. If the teaching has been conducted on correct principles, and students have been properly trained in scientific methods, and in their powers of observation and systematic arrangement of their knowledge, they must necessarily succeed better with their future anatomical and physiological studies. The students in last year's preliminary scientific class are now engaged in studying anatomy and physiology, and many of those who passed under our instruction two years ago have already succeeded in passing their next examination (Intermediate M.B.) At the last Intermediate M.B. Examination there were successful 23 students from St. Bartholomew's—a larger number than we remember to have previously passed from our school, and St. Bartholomew's men secured nearly as many places in honours as all the other schools combined. This we believe to be partly due to the sound scientific training St. Bartholomew's students receive in the earlier part of their career.

The following tables have been constructed with the idea of showing the results obtained by scientific colleges and schools where special laboratories are provided, and comparing them with our results, obtained without any special laboratory accommodation.

Number of Students who Passed the Preliminary Scientific Examination in July 1886 *from the more Important Colleges.*

College.	Number in Honours.	Number in First Division.	Number in Second Division or Part of the Examination.	Total.
University College, London .	6	1	26	33
Owen's College, Manchester .	3	3	9	15
Mason College, Birmingham .	1	2	7	10
Yorkshire College, Leeds .	3	1	3	7
Normal School of Science, Kensington . . .	0	0	3	3
University College, Liverpool	0	0	2	2
King's College, London . .	0	0	2	2

At the various medical schools having no special laboratory accommodation, the results were as in the following table :—

Number of Successes Obtained by the London Medical Schools in July 1886.

Medical School.	Number in Honours.	Number in First Division.	Number in Second Division or Part of Examination.	Total.
Guy's	0	5	10	15
London	0	0	9	9
St. Thomas's	0	1	3	4
St. Mary's	0	1	2	3
Westminster	0	0	1	1
St. Bartholomew's	2	4	12	18

From the above tables, it is clear that the result obtained by St. Bartholomew's is the best of all the medical schools having no special laboratory accommodation, and is only second to University College *in actual number of passes*, and superior to those of the other schools having special laboratories.

The Preliminary Scientific students who desire to obtain honours have to compete with the candidates for the Intermediate B.Sc. Examination, and they are thus placed at a disadvantage, for they compete with students who are devoting themselves specially to science. The highest places in honours are therefore, as a rule, obtained by the Intermediate B.Sc. students. At the last July Preliminary Scientific Examination, one of the St. Bartholomew's students who obtained honours was *second* in chemistry of those who entered for the Preliminary Scientific Examination, and the other obtained the *fourth* place in zoology amongst Preliminary Scientific candidates.

We will now detail the teaching arrangements by which we are able to secure this result.

I. *Arrangements for teaching Biology.*—The students for the July examination receive instruction which extends over nine months, viz., from October to July. During this period, the class meets on three days a week for a "demonstration," which is really of the nature of a lecture, the subject of each "demonstration" being illustrated either by blackboard sketches or by specimens. Each "demonstration" is of one hour's duration, and is given in one of the lecture-theatres of the school. In addition, the students assemble on two days a week for practical

work in the large physiological laboratory. Here, they become practically acquainted with the subjects treated of in the "demonstrations." Each student works over completely every type of animal and vegetable life required by the examination. Other types are also worked over, when they serve to illustrate some important principle. Every student provides himself with a microscope and mounting apparatus, with dissecting instruments, &c. A large amount of microscopic work is done. Every student thus becomes early acquainted with the practical use of his instruments, and acquires experience in microscopy and dissecting, which serve as excellent introductions to practical physiology and anatomy. Each meeting of the practical class is of two to three hours' duration. Thus the student receives in class-work about eight hours' instruction per week. In addition to this, examinations (written and practical) are periodically held, so as to test the knowledge of the work already done. Each student is required to take notes of the "demonstrations," and to make drawings of all dissections and practical work done. These are from time to time examined by the teacher. In addition to the points which may from time to time occur in the ordinary "demonstrations," a course of ten special demonstrations are given on the embryology of the frog, chick, and rabbit, illustrated by specimens and sketches. The students for the January examination attend the same "demonstrations" and practical work as the July students, and also receive special "demonstrations" and practical instruction during September, October, November, December, and a part of January on one day a week for three hours. The total time given to the teaching of biology, including class-work, examinations, &c., is about an average of *twelve hours* a week, or *three hundred and sixty hours* in the whole year. Students also have the advantage of attending, during the summer session, the course of lectures on comparative anatomy for the Fellowship Examination of the College of Surgeons.

II. *Arrangements for teaching Chemistry and Physics.*—In chemistry, lectures are given twice a week up to the end of the first half of the winter session, thence once a week up till the middle of July. Altogether, therefore, about fifty lectures are given. The class meets for practical chemistry once a week from October up to July, each time for two hours, thus amounting to about thirty-five demonstrations. The teaching in this part is individual; and to render it as clear as possible, tables of methods, either lithographed or printed, are given to each student; and for the more advanced students differential qualitative and simple quantitative analysis are

taught. In all, the hours of instruction amount to 120 in the whole year.

In physics, demonstrations, or, more strictly, lectures are given up to January four times a week, and from then onwards twice a week. These lectures are of an hour's duration each, and are illustrated by diagrams on the board only. It has been found quite impossible to illustrate the lectures by experiments, principally because such practical illustrations require the use of a room set apart for the purpose, where apparatus may be stored, and which is supplied with gas, water, and other appliances, and which may be darkened at pleasure by opaque blinds or shutters. From experience of former years it has been found impracticable to attempt anything of this kind in a common class-room, since demonstrations frequently succeed one another so rapidly that there is not time to fit up or remove the apparatus between one demonstration and the next. However, the practical part is not entirely neglected. Demonstrations are given once a week, of two hours' duration each, on the use of physical apparatus; and all the simpler quantitative experiments in each branch of the subject are performed. The apparatus necessary for these experiments is principally borrowed from makers; sometimes it is improvised from what material there is at hand, or else it is the private property of the demonstrator. The cost of hire and carriage amounts therefore to a quite considerable sum in the year.

The course of physics amounts, therefore, to about 190 hours' work in the year.

There is no separate exercise-class in either physics or chemistry, but questions are set every week which are worked out at other times; and the answers, when corrected, are gone through individually with each student.

The above account of the results of examinations and of the arrangements for teaching shows that we can obtain as good, if not better results, than any other college or medical school, and clearly establishes that teaching of science *preliminary to medicine,* far from being abandoned, should be encouraged and developed at our Medical School. We should endeavour to do some more advanced work and to obtain more places in honours. Our percentage of successes for the pass examination is already very high, although the *absolute number* of successes is not so large as could be desired. It is in the direction of providing accommodation for an increased number of students in preliminary science, and for more advanced work that our efforts at improvement should be chiefly brought to bear.

We are conscious that it has always been the desire of the authorities of the Medical School to maintain the excellence of every branch of the teaching at St. Bartholomew's, and the Preliminary Scientific Class has always been adequate to the requirements of the students; but we feel that the time has come when considerable alterations are necessary, and we trust that these studies will continue to receive the careful consideration of the Medical and Surgical Staff. Our object is to call attention to the subject, and, although we are and have been obtaining good results, to improve the department in which we are the teachers. We believe that, with increased facilities, our already good results would be improved, more students would enter for their scientific work at St. Bartholomew's, and much advantage would accrue to the Medical School.

CASES OF QUIESCENT PHTHISIS.

BY

J. A. ORMEROD, M.D.

It is a well-known fact that phthisis may sometimes become arrested; but this, I imagine, is chiefly seen in private practice. Here it is possible to employ varied and efficient lines of treatment, and to such treatment the good result in particular cases may justly be ascribed. With hospital out-patients the treatment is necessarily limited; drugs may be administered, and that with benefit; but as to climate, diet, occupation, and other surroundings, the patient's condition remains unaltered. We therefore see a nearer approximation to the natural course of the disease.

It is a matter for congratulation that, even so, cases occur which remain stationary for lengthened periods, or even regress. This, I believe, may occur at any stage, but is most frequent among those which, on hasty consideration, might be set down as the worst class of cases, viz., those in the so-called third stage, where the physical signs, extensive and marked dulness, and bronchial sounds, often with signs of shrinking, point to old and extensive excavation. Among these, cases of a stationary character are often found; whether it be that they have had from the beginning a tendency to the formation of fibroid tissue, which, while it checks the dissemination of the disease, renders the damage already done more perceptible to physical examination, or whether it be that they have attained their specific limit, and that the disease has exhausted itself before exhausting the patient.

The following examples are from the out-patient room of the Victoria Park Hospital:—

Case I.—Under observation nearly three years. From the first well-marked disease of left lung, but local progress of it

slight, and patient's general condition good till near the end of the time.

W. D., age 63, gardener.

May 12, 1879.—Cough for two years; thick sputum; no history of hæmoptysis; no phthisis known in family. General shape of chest suggests emphysema, but left side is smaller than right. Percussion-note impaired over left front, almost dull in second and third interspaces; cardiac pulsation visible in those interspaces; marked bronchial breathing there. With the first heart-sound a murmur, best heard at the apex. Has also pain in upper part of left chest, passing to the shoulder-joint; cannot raise that arm fully (on account of the pain it gives him?).

Attended till the end of February 1880; frequent examination of his chest revealed very little change, except that the abnormally situated cardiac pulsation became less evident; that friction sounds or fine râles were occasionally heard at the left base behind and laterally, and that towards the end of the time cracked-pot sound was obtainable in left second and third interspaces. Said that he felt much better and stronger; cough did not get worse; could lift left arm to horizontal position.

June 14 to October 1880.—Again attended for the cough and troublesome sputum. Physical signs exactly as before plus a feebleness of breathing sound at left base behind.

March 21, 1881.—Bad cough; spat blood four days ago. Physical signs over left front as before (obscure râles also on right front); behind at left base impairment of percussion-note and of breathing sound, with fine râles or friction. Complains of tingling and swelling of the feet; he had mentioned something of the kind when he first came to me. Attended for two weeks only.

March 6, 1882.—Complains of cough and sputum, and of feeling of exhaustion. Says legs and feet have been swollen. Physical signs: Left chest shrunken; cracked-pot sound in left third (and second?) interspace. Bronchial breathing in outer part of left third interspace. Moist râles, but not loud nor abundant, over all left front more or less. Doubtful râles (? conducted) heard on right front also. Breathing sounds almost absent at left base behind; obscure râles there.

Case II.—Under observation for over three years. Physical signs practically stationary, except perhaps for additional catarrhal sounds.

Sarah F., æt. 29, married.

May 12, 1879.—Loss of appetite; pain in left chest; cough and

much sputum. Had been an in-patient three years before. Mother died, she thinks of consumption, at the age of 54. Distension of left external jugular vein; fulness of left side of neck; thickening (?) of left clavicle. Percussion-note impaired on right side of chest; bronchial breathing at one spot in right first interspace. Attended till December.

December 1879.—State of chest unaltered, except for occasional râles on cough in right second interspace.

March to October 1880.—Physical signs as before; hæmoptysis twice during this period.

February and March 1881.—Remains in *statu quo*.

September 1881 to April 1882.—Twice during last summer (says she is always worst in the hot weather) she coughed up some thick blood; this symptom recurred, and became troublesome during the present period of attendance. Physical signs as before plus moist sounds below right first interspace in front, and sibilus (transitory) at right base behind. General health pretty good, but cough noted as troublesome and breath short. A symptom recurred which she said she had had when in the Hospital, viz., pain in the right shoulder, with a feeling as if she were pinched at the elbow, with numbness in right hand and fingers, and a tendency to drop heavy things (March 1882). Towards the end of April the right arm improved and the left became numb.

July and August 1882.—Again some hæmoptysis. Percussion-note over right front improved; bronchial breathing as before; crackling râles over right front. In right supraspinous fossa similar râles, with impaired percussion-note.

Case III.—Under observation for more than two years. At first slight signs at left apex; ten months later signs of extensive disease in left lung; these, except for indications of shrinking, remained stationary for a year. Four months afterwards impairment of general health and signs of disease in the other lung.

Caroline J., æt. 32.

February 12, 1881.—Had attended a year previously for cough and hæmoptysis. Three months before the present date was taken with severe pain in left breast and palpitation. A week later she miscarried, being five months pregnant. Confined to bed seven weeks, the pain persisted all that time. Now complains of cough and short breath. Father and one brother died of phthisis.

Complexion pale and rather sallow; pulse small; tongue flabby, slightly furred. Physical signs: impaired percussion-note under left clavicle; occasional click there at end of inspira-

tion. The same doubtful râle in left supraspinous fossa. After six weeks' time the percussion-note over left front is noted as normal; doubtful râles heard there after cough only, but numerous sticky râles in left supraspinous fossa. Complained of night-sweats. By the end of May, when she discontinued attendance, her general condition had improved.

November 1881 to January 1882.—Cough, much sputum, occasional hæmoptysis, pain in the chest, palpitation, loss of flesh. Physical signs indicative of extensive disease in left lung; percussion-note almost dull in left front; bronchial breathing at outer part of left first and second interspaces; breathing sounds absent, but heart-sounds loud below that; a few coarse râles below left clavicle; scraping sounds in left supraspinous fossa. Feeble breathing sounds in both bases behind.

April and May 1882 and July to November 1882.—Physical signs much the same, but movements of left side very deficient; heart's impulse visible up to second left interspace, presumably from retraction of the diseased lung. Pain about the chest, palpitation, and short breath were prominent symptoms.

In March and April 1883 she came again, having been too ill to attend in the interim; pulse now very feeble; respiration frequent; signs of disease in right lung as well as left.

Case IV.—Under observation two years and four months. At first, establishment of cavity in left lung; subsequently quiescence and signs of shrinking of lung.

Milly O'H., æt. 27.

Feb. 9, 1880.—Had been two years married. A few months after marriage had sore throat, rash, sores on hands, &c.; was treated by an army surgeon (her husband being a soldier) for syphilis. Never been pregnant. Cough and phlegm for eighteen months; aphonia three months; hæmoptysis just before Christmas 1879. Her mother died of phthisis. Physical signs: impaired percussion-note and bronchial breathing under left clavicle. She attended till August 1880, and though her symptoms were no worse, the local disease became more marked; percussion-note dull under left clavicle, and distant bronchial breathing with loud gurgling noises; sibilus in left supraspinous fossa. On right side, moreover, râles after cough appeared under the clavicle.

January to May 1881.—Cough and aphonia as before; pain in left chest, shortness of breath. Most of these symptoms, however, improved during this attendance, and her general health got steadily better. The mischief in the left lung seemed quiescent, though more extensive than in the previous year. Over

left front either dulness or poor resonance; breathing sounds sometimes absent, sometimes faintly bronchial; heart-sounds loudly conducted; occasional creaking or small râles. Behind, impaired percussion-note in left apex, faint sibilus (transitory) at base. There were small râles audible under the right clavicle.

December 1882 to June 1883.—Has been under treatment elsewhere for some skin-affection. Says she has continued to improve; but still the old symptoms are present, shortness of breath being especially troublesome. Palpitation developed during this period of attendance. Such changes as there were in the physical signs indicated shrinking and adhesion of the left lung; movement on that side limited; cardiac impulse visible up to second interspace; left front, except a small part near the lower end of sternum, dull; heart-sounds abnormally loud above and outside nipple; left apex behind dull. No bronchial breathing, but creaking sounds and small râles over all left chest. Still small râles under right clavicle.

From her general appearance, I do not think phthisis would have been diagnosed. The aphonia was due to a simple chronic laryngitis. The voice, which she lost at the end of 1879, improved slowly, till at the end of 1882 there was only slight hoarseness. The larynx also, except for a slightly granular condition of the vocal cords, became normal.

Case V. Under observation a year and four months. Large dry cavity in right apex, spreading very slightly. Patient suffers also from syphilis and epilepsy.

William C., æt. 30.

April 30, 1885.—During the last year pain in right side of chest, cough, occasional hæmoptysis. Epilepsy for thirteen or fourteen years; the fits are severe, and often occur in batches; after a batch of them he becomes maniacal and violent. Lived a very loose life in past years; had syphilis ten years ago, and is even now suffering from severe psoriasis; has also a troublesome stricture. His mother died of phthisis. He complained sometimes of night-sweats; had loss of appetite and angry furred tongue. It will be sufficient to give the first and last examinations of his chest.

April 30, 1885.—Intense dulness and bronchial breathing from right clavicle to lower edge of third rib. No râles. Behind, impaired percussion-note from right apex downwards to a little below spine of scapula.

August 26, 1886.—Dulness and bronchial breathing from right apex to fourth rib; between this and the liver-dulness is a zone of impaired resonance. Dulness behind over the same

area as formerly; bronchial breathing at apex behind. No moist sounds.

In the next three cases the phthisis was mainly or altogether localised at the base of the lung. Such a localisation is not common, and where it occurs the phthisis, so far as I have been able to observe, is of the chronic type.[1]

Case VI.—Under observation two years and nine months. Signs of disease in right lower lobe, becoming intensified during first twelve months of observation, afterwards altering but little. General health remarkably good, but deteriorating during the latter part of the time after a childbirth.

Mary Anne H., æt. 25.

December 31, 1881.—Hæmoptysis eighteen months ago—a cupful. Well after this till four months ago, when she again had hæmoptysis, lasting a week. Since this has suffered from cough and debility. Was confined sixteen months ago, and nursed the child for four months. Her mother and one sister died of phthisis. Is a well-nourished woman, but pale and slightly flushed. Pulse small and frequent. Chest well-shaped; the front practically normal; behind, percussion-note impaired on right side, most markedly at base; breathing sounds harsh along the vertebral border of right scapula, with harsh râles; deficient breathing sounds above and below this part. By June 1882 there were semi-bronchial sounds along the vertebral edge of right scapula; otherwise little change. She attended till August 1882; she gained flesh and her general health improved.

November 1882 to February 1883.—Bronchial breathing about angle of right scapula; breathing sounds absent below; creaking or fine friction in right base behind.

December 1883 to March 1884.—Is now (December) five months pregnant. Cough with much phlegm; breath short; cough particularly troublesome when she moves in bed. Physical signs unaltered, except for some rhonchus over left (sound) lung in March 1884. Her breath got shorter.

August and September 1884.—Was confined in April, and nursed for two months. Since delivery has become weaker and has lost flesh; cough and breath bad; slight hæmoptysis. High-pitched percussion-note and puerile breathing in left front; feeble breathing in right front; signs over right back very much as before. Near angle of left scapula a peculiar râle, like suction suddenly applied in the middle of inspiration.

[1] But on this subject Dr. Kidd's paper (published since I wrote this) in the *Lancet*, October 2 and 9, 1886, should be consulted.

Case VII.—Under observation two years and two months. At commencement advanced disease of left lung with cavity at base; then shrinking of left lung with improvement of general health for a year; a year later, aggravation of general symptoms, though without indication of further local disease.

Sarah H., æt. 25.

August 28, 1882.—Note by one of the resident staff: "Cough for years; worse during last three months; short breath for three months; night-sweats; pain down left side of chest and arm; left base dull; breathing cavernous with fine abundant crepitation." After three weeks the note is, "Improved in herself, but physical signs more advanced."

October 9, 1882.—Left chest dull throughout, front and back; under left clavicle bronchial breathing with harsh râles; below that, absence of breathing sounds; loud heart-sounds; behind, at left apex and angle of left scapula, bronchial breathing and râles (very marked at the latter spot); below that, râles smaller, but still numerous and loud. Her breath was very short. She knew of no phthisis in her family.

She attended regularly till May 1883. She lost the night-sweats; her cough and breath improved; she made flesh; but she still remained feeble. She complained of palpitation and of a throbbing pain passing from the left chest into that shoulder and arm. Such alterations as there were in the physical signs chiefly indicated drying up of the cavity and shrinking of the lung. Thus in April 1883 the left chest is noted to be smaller than the right; the heart is felt from just within the left mamma up to the third left interspace; the adventitious sounds consisted of fine dry râles at the apex and axilla, and of friction at the base behind. Still bronchial breathing in outer part of left infra-clavicular region, in left axilla and supraspinous fossa; breathing sounds almost amphoric below left scapula.

July and August 1884.—Has been away at Folkestone; looks well-nourished and in good health. Chief symptoms now are short breath, palpitation, and pain in left arm. Physical signs no worse; indeed the bronchial breathing is less marked.

July to November 1884.—Further retraction of lung from the heart, which can now be seen and felt plainly in left second interspace; breathing sounds about angle of left scapula more amphoric; otherwise no change of signs. She nevertheless became worse; the breath was very short, the pain very severe, the cough and sputum very troublesome at night.

Case VIII.—Under observation six years. Cavity diagnosed at first visit. Two years later, extensive disease of right lung,

principally at the base. During next four years chiefly contraction of right lung.

Martha M., æt. 23.

September 29, 1879.—A note by one of the resident staff simply states that she complains of cough with frothy expectoration, and has the signs of phthisis in the third stage on the right side. She had also been an out-patient in the preceding May.

September 26, 1881.—Has just had some hæmoptysis. Complains of aching right shoulder, and of pain and cough when she exerts herself. Anæmic and very thin. Knows of no phthisis in her family. Physical signs: right front almost dull; breathing sounds harsh with occasional râles; right back dull; breathing at the apex like that in front; below the scapula bronchial.

April 1883.—Has just had more hæmoptysis. Complains principally of cough and short breath. Signs indicate extensive phthisis; right side contracting; on left side heart's impulse is felt only in close proximity to sternum, but on right side it is visible in second (and first?) interspace near sternum; normal cardiac dulness absent. Much impairment of percussion-note over all right side; bronchial breathing at outer part of right infraclavicular region, and just above right mamma and over most of right back, with fine râles or friction here and there.

The last note I have of her is at the end of 1885: she had again had hæmoptysis, and had the aching pain about right chest and arm. Cardiac impulse wholly displaced to right of lower sternum; dulness and bronchial breathing less appreciable than heretofore under right clavicle, but very intense from the scapula downwards. She considered that she was getting better.

(The actual periods of attendance of this patient were as follows:—September and October 1879, 1881, 1882; April and May 1883; November and December 1883 and 1885. I have endeavoured to give only the principal points of her case.)

These were all cases of phthisis in the ordinary sense; whether the phthisis was bacillary I am unfortunately not able to say, in the absence of proper observations on the sputum. I must plead in excuse, firstly, that most of the cases were begun before such investigations were much practised; and, secondly, that in the work of a crowded out-patient room I have been unable to carry them on sufficiently systematically.

Doubtless physicians of larger and longer experience could supply better instances of advanced but quiescent phthisis, but

these cases may suffice to illustrate this important point, that, putting aside such contingencies as the occurrence of profuse hæmoptysis or of intercurrent disease, &c., the gravity of prognosis is by no means proportional to the intensity of the physical signs.

Concerning the symptoms there is little that is special; but I think that perhaps the following symptoms are more marked in this than in other types of phthisis:—Shortness of breath, especially on exertion, presumably due to the extent of lung-destruction; palpitation when the disease is on the left side, which may be ascribed, I suppose, to mechanical interference with the action of the heart; pain in the chest, possibly connected with chronic pleural mischief. Along with this I have noted in some instances pain running into or even down the arm, and accompanied with a feeling of numbness or loss of power. This may be explained as the radiation or transference of pain, the objective cause for which lies in the chest-walls; or it may be put down to actual disease of the nerves of the arm. Foreign authors insist on the frequency of peripheral nerve-disease in tubercular subjects; but I am not aware that in England such an association has been established by clinical observation.[1] Looking over a large number of notes of phthisical cases, I can find no definite instance of peripheral neuritis; and even the symptoms just mentioned, which cannot be called characteristic, are not particularly common.

[1] See Pitres and Vaillard, *Revue de Médicine*, 1886. It should be mentioned, however, that, according to these authors, peripheral neuritis may occur in tubercular subjects without giving rise to any symptoms, and is therefore only to be recognised post-mortem.

ILLUSTRATIONS OF PERIPHERAL NERVE-DISEASE.

BY

J. A. ORMEROD, M.D.

Under this head I have to offer the following cases:—

Two cases of neuritis, affecting chiefly the anterior tibial nerve.
Some cases of facial paralysis presenting slight peculiarities.
A case of double facial paralysis.
Some cases of multiple neuritis.

It will be unnecessary for me to enter upon any general discussion of the subject, looking to the many excellent writings that have recently appeared upon it, both at home and abroad.

Case I.

Neuritis, chiefly of Anterior Tibial Nerve, apparently Rheumatic — Slow Improvement — Some Affection of Nerve-Trunks of Upper Limb.

William B., æt. 42, hotel-porter, was sent by Dr. Abercrombie to Queen Square on December 5, 1883.

Complains of loss of power in right foot. The affection began with pain down the external and anterior aspect of right leg, which lasted about a fortnight, the loss of power developing meanwhile. [Unfortunately the duration of the disease is not noted. I think it was two or three months.]

He says there is numbness over the root of the great-toe, dorsal aspect (corresponding very closely to the cutaneous distribution of the anterior tibial), but in no other part.

Much wasting of anterior tibial group of muscles, particularly noticeable in the position of the tibialis anticus. Cannot invert foot, nor dorsi-flex foot or toes; power of eversion and plantar flexion preserved. The right peroneal nerve seems to me thickened as compared with the left, and this is confirmed by several medical gentlemen present.

No history of syphilis nor of gout; never had rheumatic fever, but has had rheumatism in the limbs. Some years ago was laid up with sciatica in right leg; says he has been unable to put down the right heel properly since.

Electrical examinations made during the next fortnight gave the following results:—

Faradic Reaction.—Absent in right anterior tibial group; present, but rather feeble, in right peronei; normal in left leg.

Galvanic Reaction.—Absent in right tibialis anticus; present in right extensor digitorum, but KSZ only slightly > ASZ; present in right extensor hallucis, but ASZ = KSZ; present in right peronei, ASZ = KSZ (?).

Muscle-twitch not sluggish. Quantitatively no difference between the diseased and healthy leg. [The observations were controlled by a galvanometer, but it was not graduated in absolute measure.]

On stimulation of the right peroneal nerve the peronei only acted. The wasted muscles did not react to percussion. Ordered pot. iod. gr. v. ter, and the constant current to the leg.

During December and January he improved. At the end of December some transitory pain in right leg and about right dorsum ilii.

February 6, 1886.—Pain, numbness, and loss of power in right arm and hand. Pain has been severe the last two days, slight for three days before that; is seated chiefly at upper border of scapula; runs thence down arm; hurts him when he moves or tries to grasp anything. No definite anæsthesia, but fingers, thumb, and back of right hand feel numb.

Some twitching of muscular fibres in lower part of right deltoid. Increased tendon-reaction to right wrist-tap. Apparently some tenderness of ulnar and musculo-spiral nerve-trunks.

February 8.—Pain now starts from outer condyle of right humerus, and runs down back of fore-arm into two first fingers.

Electrical (galvanic) examination of the nerve-trunks showed

some increased excitability of the ulnar and median, with slight qualitative alteration in the reaction of the ulnar.[1]

This affection of the arm passed off rapidly, though even as late as September 1884 a slight numbness of the first and second fingers remained. The leg also improved, but much more slowly; the toes no longer caught in the ground, and he became able to resume his occupation as porter. Yet even in the beginning of 1885 he could not raise the toes when the sole was placed flat on the ground. There were some doubtful indications of returning faradic excitability in the extensor of the toes, and of galvanic irritability in the tibialis anticus; otherwise the electrical conditions remained unaltered.

The points which may be noticed are—the predominance of symptoms in the district of the anterior tibial nerve, though the peroneal trunk could be felt to be thickened behind the head of the fibula; the imperfectly-developed reaction of degeneration; the cause, presumably a rheumatic taint; the occurrence of neuritis in the arm also, indicating that the affection depended on some constitutional cause.

Case II.

Neuritis of Right Peroneal Nerve—History of Excessive Beer-drinking.

John K., butler, æt. 37.

August 26, 1885.—Complains that right foot drags; says he cannot put that heel to the ground. Has numbness involving right great-toe (dorsal surface), and lower third of right leg on its outer and anterior aspect.

This came on suddenly, while walking, about a month ago. There was no concomitant affection of right hand or face. Though he is subject to occasional giddiness, he did not become

[1] The details being as follows:—

Different electrode on musculo-spiral of	L. (sound) arm, KSZ at 14 elements, and at 20° of galvanometer.						
„	R. (affected) „	KSZ / ASo	14	„	20°	„
Median . .	L. arm .	KSz	28	„	20°	„
	R. „ .	KSZ	22	„	14°	„
		(ASZ and AOZ at higher strengths)				
Ulnar . .	L. „ .	KSZ	...	...	15°	„
	R. „ .	ASz	...	...	10°	„
		KSZ	14		12°	„

(The twitch of the muscles supplied being taken as index.)

giddy nor lose consciousness when attacked. There was no pain nor tenderness. Cannot dorsi-flex right foot or toes; has apparently some difficulty in everting that foot. No note as to wasting of muscles.

Electrical Examination:—Faradism.—Tibialis anticus acts equally and normally on both sides. Extensor digitorum: R. no action; L. normal action.

Galvanism.—(Extensor digitorum only examined.) R. (paralysed side) at 10 mille-ampères KSZ = (or <) ASZ; L. (sound-side) at 15 mille-ampères KSZ = (or <) ASo.

Says he never had gout, but has had what he calls rheumatism in the shoulders and sometimes pain in the knees. It turns out that he has been in a situation where beer was very liberally supplied, and he admits taking twelve to eighteen glasses per diem. I should connect his paralysis with this habit.

Nevertheless, after seeing me, he thought fit to apply to the Great Western Company for compensation, on the ground that his illness was due to a railway accident in which he had been thirteen years before!

Cases of Bell's paralysis are so frequent that it will be unnecessary to give many in detail; nevertheless the following instances may be quoted as presenting some points of interest.

Case III.

Jane P., æt. 41, applied on account of right facial paralysis in August 1884. It proved a tedious case; the voluntary power returned slowly and imperfectly.

October 1886.—The occipto-frontalis and lower facial muscles are still paralysed, though she can shut the eye. Could first shut right eye in January 1885; some twitching and then slight contracture of the affected muscles followed; and persistent overflow of tears when she eats still troubles her (October 1886).

This patient affirms that at the onset of the paralysis the right half of the tongue became covered with small white spots (ulcers she says), which lasted about a week; and she had a bad taste on that side of her mouth for six or eight weeks. Might this have been a herpes depending on some irritation of the chorda tympani?

Case IV.

Was also peculiar in the mode of onset, which appears to have been gradual, and to have been preceded by muscular twitchings.

Horace M., æt. 48, a healthy-looking country-man, came on December 17, 1884, for left facial paralysis, apparently of the usual type. Cannot shut left eye; faradic reaction absent in left facial muscles; galvanic reaction increased as compared with right side, and muscle-twitch sluggish, but polar formula normal (KSZ > ASZ). Is a little deaf, but never had earache or otorrhœa. Says that for six months before the paralysis appeared he had twitchings on the left side of face round the eye and nose. Then one day (now six months ago) he found the left face paralysed, but he could still shut the left eye. Next a temporary improvement followed, but soon the distortion got gradually worse, and for the last four months he had been unable to shut the left eye.

The history thus pointed to a progressive disease; but I saw him again a year later, and his condition was just the same, save that now on the left side the galvano-contractility was less than on the right, and the polar formula was altered (ASZ > KSZ).

Case V.

A mild case of facial paralysis, showed at an early stage an increase of farado-contractility in the affected muscles, which subsequently disappeared.

Elizabeth M., æt. 46, had left facial paralysis of three days' duration, affecting the lower face and the occipito-frontalis markedly, the orbicularis oculi in a less degree.

The paralysed side acted to a *faradic* current (coils at 6 c.m. distance), which had no effect on the sound side. She was so sensitive that a stronger current could not be borne. I had no galvanometer with which to measure the resistance; but I think it may be safely inferred that the difference in the reactions on the two sides was not due to excess of resistance in the tissues of the paralysed side, because with the *galvanic* current the difference in electro-irritability was exactly reversed; 10 cells acted on the sound side (KSZ), but not on the paralysed side.[1]

Later on the reactions were as follows:—

Ten days from onset.

[1] Moreover, differences in resistance upon the two sides are not likely to be a source of error in the face, where the resistance is at its lowest, and with a faradic current of which the electro-motive force is high. It is examining parts of high resistance (such as the legs, balls of thumbs, &c.), and with a galvanic current of comparatively low electro-motive force, that such a source of error is at its maximum.

Faradism.—Coils at 8 c.m. Both sides act, but R. (sound) side now acts better than L.

Galvanism.—R. acts rather better than L.; moreover, in L. there is slight polar alteration (ASZ = KSZ nearly).

Seventeen days from onset.

Faradism.—R. still acts a little better than L.

Galvanism.—No difference between R. and L.

In a week more the face was quite well.

Case VI.

Another mild case of facial paralysis, watched from an early stage, illustrates the independence of volitional and electrical excitability; for the electrical reactions, which had been normal till the paralysis began to mend, began then to show slight degeneration changes.

Joseph R., æt. 16, came on January 12, 1886, with well-marked left facial paralysis of three days' duration. I examined him electrically on January 12, 15, and 19, and could find no difference between the sound and the paralysed sides.

January 22.—Can shut left eye better. Electrically, there is now—to *faradism*, slight diminution of contractility; to *galvanism*, slight alteration of polar formula; the details being as follows:—

Faradism—

R. (sound) side, contraction at 10 c.m. distance of coils.
L. (paralysed) side, „ 9 „ „

Galvanism—

R. with 10 elements, KSz, ASo.
„ 12 „ KSZ, ASz.
L. „ 10 „ KSz, ASz.
„ 12 „ KSZ, ASz.

January 26.—Decided improvement. Shuts left eye well; some action in left zygomatici. Electrically the polar formula and the character of the muscle-twitch are distinctly altered.

Details as follows:—

Faradism as on last occasion.

Galvanism—

R. face with 8 elements, KSZ.
„ 12 „ ASZ also.
L. „ 6 „ KSZ and ASZ, sluggish action.
„ 10 „ KSZ and ASZ, marked and quick.

January 29.—Is improving quickly. Zygomatici act well, as he shows his teeth. Left eye waters much. Electrically not much change.

February 1, 1886.—Having now a galvanometer and resistance coil, I was able to determine that there was no difference in the resistance on the two sides of the face: the resistance on either side (before electrisation) was about 1450 ohms.

To *faradism*, no change.

To *galvanism*—

	Elements.	Mille-ampères.	
R.	8	5·5	KSZ, ASz.
	6	4	KSz, ASo.
L.	8	5·5	KSZ.
	6	3	KSz, ASz, sluggish action.

February 9.—The paralysis appears quite gone. Electrically there is still increased galvano-contractility, but the polar formula is becoming normal, viz.:—

Faradism, as before.

Galvanism—

R. face at 8 elements = 6.5 m. a., KSZ and ASz.

L. „ 4 „ 1.5 „ KSZ and ASz, and slow action.

February 19.—Electrical reactions are now quite normal.

The next is a case of strictly symmetrical facial paralysis, which is in itself not very frequent, and which will serve as a transition from the cases of simple to those of multiple neuritis.

Case VII.

Double facial paralysis without other signs of nervous disease, accompanied by manifestations of secondary syphilis; recovery. Three years later, an attack of right hemiplegia, from which patient also recovered.

Gilbert L., æt. 35, came to Queen Square on August 8, 1883. The condition of his face was remarkable. As he entered the room and sat quietly there was nothing noticeable, save that the lips looked slightly parted and the face smooth; but when the facial muscles should have been brought into play, the nature of his complaint became evident. He could neither whistle, show his teeth, frown, nor shut his eyes in the slightest degree. When he laughed his face became slightly congested, his body

shook, but the face was absolutely immobile. The appearance was so peculiar that even his children had commented on it. When the conjunctiva was touched the eyeballs rolled upward, but the eyelids did not wink. Movement of palate, except for slight deviation of uvula to right, normal. Pharyngeal reflex present, though slight. Movements of eyes, tongue, and jaws normal. No affection of sensation. Optic discs and pupils normal. Hearing particularly tested and found normal. No trace of paralysis in the limbs.

Owing to the smallness and tortuosity of the auditory meatus, I could not thoroughly inspect the tympanic membranes, but he was confident that he never had otorrhœa, deafness, nor pain in the ears. On the trunk were visible the remains of a slight erythema, and on the palms small scaly patches the size of a split pea. Urine (tested later) contained no sugar nor albumen.

History.—Two weeks ago, after sculling on the river, he had a shower-bath, and thinks that he caught cold. On inquiring into the symptoms of this "cold," I find that it consisted of a rash which involved the palms, soles, and trunk generally, though not the face. The remains of this rash is still visible. For the rash he took arsenic and nux vomica, and subsequently (exact day not stated) the affection of his face came on. One day he noticed he could not whistle; the next morning, looking into the glass, he noticed that the "the pupils of his eyes were very small," and his face had meanwhile become paralysed.

Asked as to previous syphilis, said he knew of nothing except a gonorrhœa two years ago; but his statements on this point may not have been correct.

The electrical reactions were tested next day by Mr. Norman Rushworth, our then medical registrar, who reported:—

Faradism.—Both sides act to moderate current, rather a stronger one than is required for operator's face.

Galvanism.—Slight action to 8 Stöhrer's elements, and in lower lip to 4 elements (ASZ > KSZ in both cases).

Ordered pot. iod. gr. v., increasing to gr. xv. ter die.

During the first five weeks there was a slight improvement, but it was not maintained; so that on October 2 the paralysis was still practically unaltered. In September he complained of watering of the eyes; the hair of scalp, eyebrows, and upper lids began to come out.

October 2.—Electrically tested, the muscles now show complete reaction of degeneration, viz., absence or great diminution of farado-contractility, increase of galvano-contractility, with slow

muscle-twitch and alteration of polar formula (details in foot-note).[1]

Ordered galvanism, labile method, to face.

October 23.—Decided improvement of power in lower part of face. Also some attempt at closing the eyes. Forehead still quite smooth and immobile. Psoriasis is made worse, he thinks, by the iodide (some liquor arsenicalis to be added on this account).

November 20.—Much improvement. Can show teeth, move forehead slightly, and almost shut the eyes. Still cannot whistle or close mouth firmly. Less watering of eyes.

December 11.—Some evidence of returning farado-contractility. Psoriasis of soles becoming worse.

December 14.—The rash is very bad. On the soles are large patches with rounded sinuous outlines, surface dusky red, and looking like an excoriation just healed over. Epidermis at edges much thickened. Heels much thickened and very tender. Similar but smaller spots on the palms. A few spots on the scalp, which look as if they had been pustular. Slight hoarseness. Subsequent laryngeal examination showed a sharply cut ulcer on the epiglottis.

Nevertheless the facial paralysis continues to improve, and the electrical reactions, except for some traces of alteration in the polar formulæ, are now normal (details in foot-note).[2]

[1] October 2.—*Faradism* to facial muscles. Little or no action under a current stronger than one which acts readily on my own face.

Galvanism—		No. of Elements.	Degrees of Galvanometer.	
To zygomatici	R.	4	9°	KSZ=ASZ.
	L.	6	10°	KSZ=ASZ.
To lower eyelid	R.	4	5°	KSZ.
	L.	6	8°	ASZ and AOZ.
To levator labii superioris, &c.	L.	4	very slight.	KSZ.

(Muscle-twitch sluggish in every case.)

Galvanism—				
To trunk of facial	R.	10	20°	KSZ>AOZ.
	L.	10	20°	KSZ>ASZ.

(Twitch of muscles at angle of mouth only.)

[2] December 14.—*Faradism* (rather strong current) acts on all the facial muscles of both sides.

Galvanism—		No. of Elements.	Degrees of Galvanometer.	
To zygomatici	R.	6	10°	KSz=ASz.
	L.	8	15°	KSZ>ASz.
		10	15°	KSz, ASo.
		12	28°	KSZ>ASZ.
To facial nerve-trunk	R.	6	10°	KSz=ASz.
		8	15°	KSZ>ASz.
	L.	12	22°	KS? ASo.
		14	30°	KSZ, ASZ.

(The same galvanometer being used as on the last occasion.)

December 22.—Mr. Morrant Baker kindly saw him with me. He said the rash was certainly syphilitic; moreover he detected a suspicious-looking place under the foreskin. He advised the discontinuance of iodide (which he thought aggravated the rash), and treatment with mercury and chalk and iron.

January 1, 1884.—The rash is much better. The distal-joint of one finger (which was inflamed at the time of the last note) has suppurated and been opened. There are now large unhealthy granulations upon it, and a red line up the arm. Mr. Baker took charge of him for this at St. Bartholomew's, and removed a piece of dead bone.

He then improved steadily in all respects, so that by March 4, 1884, the rash, except a spot or two upon the scalp, was gone; the finger seemed quite well. The facial palsy had disappeared, except that he still could not whistle.

I heard no more of him till between two and three years afterwards. His sister then came (June 29, 1886), saying that a few days previously he had had an apoplectic attack; she was told that he "fell three times," and then became unconscious for some hours. Pain in the head and vomiting followed. Next day when she saw him he had lost power in right arm and leg, and the speech was much affected. He had since been forgetful, constantly sleepy, and not knowing where he was.

June 30.—The patient is brought. The hemiplegia is recovering; thus he can walk, though rather unsteadily; can move right fingers and thumb, fore-arm and arm. Speech rather indistinct, tongue straight. The old facial palsy has quite recovered, except the inability to whistle. His manner is more deliberate than formerly, as if his ideas were foggy. Says he has a "muddled feeling" and is drowsy. Tendon reactions exaggerated at wrists and knees, equally on both sides. Pupils medium size, act rather sluggishly to light. Urine, no albumen nor sugar.

He was again put on a mercurial course, and by July 14, 1886, was able to resume his occupation as a ticket-writer.

This case deserves some comment. First, with regard to the locality of the lesion which caused the paralysis. Both the character of the paralysis, involving as it did the orbicularis of the eyes and occipito-frontalis, and also the electrical reactions, show that the lesion was not in the cerebral hemispheres. Neither could it have been in the bulbar nuclei; for disease in that position, acute in character, could scarcely have affected both facial nuclei without involving those of some other nerve. The only remaining alternative is disease of the nerve-trunks. The chief objection to this, viz., the symmetrical character of the para-

lysis, loses most of its force when we consider that a constitutional cause was probably at work. Secondly, as regards the nature of this neuritis. It was not secondary to ear-disease, nor does it seem likely that an ordinary "rheumatic" neuritis should have attacked both nerves so simultaneously and symmetrically. But it may reasonably be connected with the syphilis, which was in actual progress at the time, and which is indeed mentioned by Gowers as the usual cause of double facial paralysis.[1] As an illustration of symmetrical nerve-disease from this cause, I may refer to a case which I formerly published,[2] where both third nerves were found post-mortem to be the seat of syphilitic infiltration. Thirdly, though no history as to the date of the primary infection could be obtained, it is interesting to note (as Mr. Baker pointed out to me) the coincidence of a syphilitic nervous affection with an early or "secondary" form of syphilide. Lastly, the patient reappears at a later stage with an attack of hemiplegia, which, considering his comparative youth and his freedom from cardiac or renal disease, may also be ascribed to the syphilis. This second nervous manifestation, considering its sudden and transitory nature, and the drowsy and muddled condition which followed, I should be inclined to connect with some vascular syphilitic lesion rather than with actual deposit in the brain or meninges.

CASES OF MULTIPLE NEURITIS.

Case VIII.

Peripheral Neuritis of Lower Limbs, apparently from Cold—No History of Alcoholism.

Wm. S., æt. 37.

June 23, 1886.—Loss of power in the legs came on rather suddenly whilst walking two weeks ago. For about a month before this had pains in the back and down the legs—sharp shooting pains, which he calls "rheumatics." Can move the legs, but cannot walk. A certain amount of numbness in the legs. Some difficulty in holding his urine. Tendon reactions entirely (*i.e.*, even when examined by Jendrassik's method) absent at both knees. Plantar reflexes present. Cannot dorsi-flex feet or toes. Electrically—in vasti of both thighs, normal action to both currents; in extensors of toes (both sides), *faradic* reaction absent; to *galvanism* ASZ > KSZ; muscle-twitch sluggish

[1] Quain's Dictionary of Medicine.

[2] *Brain*, No. 18.

under small currents, that is to say, well-marked reaction of degeneration. Pupils act normally to light.

His habits are said to be strictly temperate, and his appearance certainly does not suggest alcoholism. No history of syphilis. He is in the habit of filling up his spare time by bottle-washing, and he ascribes his complaint to exposure in damp cellars. Ordered pot. iod. gr. v., tr. nucis vomic. ℥x. ter.

June 30.—Much better. Walks into the consulting-room, though unsteadily and with help. As he walks his legs look loose, and seem to give at the knees; he also lifts his knees rather high. The numbness is better, but has left a tingling sensation. Micturition better.

July 14.—Still improving. Can now dorsi-flex feet and toes. No numbness nor pain. Micturition normal. Tendon reactions still absent.

July 28.—Slight relapse as to the pains and the micturition, which he ascribes to the bad weather, but the power of walking improves.

August 11.—Diarrhœa during last fortnight, which he thinks has made his legs weaker. He walks, I think, more unsteadily. With the feet together and eyes shut he is unsteady and tends to fall. The electrical reactions[1] show improvement; indications of reappearing farado-contractility, and of return to normal polar formula.

The diagnosis of tabes, which might have been suggested by the pains, the absence of tendon reaction, and the inability to stand with the eyes shut, was negatived by the rapid onset and recovery, the actual paralysis and reaction of degeneration, and by the absence of reflex irido-plegia. The pain in the back, though mentioned, did not appear to have been severe, nor worse on movement, as would have been the case in meningitis. The rapid improvement is against this supposition, and against that of a lumbar myelitis. There seemed to be no reason to suppose that this man was intemperate, though, of course, one could not be certain on this head.

[1] August 13.—Extensors of toes and tibialis anticus.

Faradism.—Reaction present, but a very strong current is required. He does not seem to feel the pain of this.

Galvanism.—L. KSZ > (slightly) ASZ at 9 mille-ampères.
R. KSZ > ASz . . at 6 ,, ,,
ASZ . . at 7 or 8 mille-ampères.

Muscle-twitch slow.

Case IX.

Paralysis of Extensors of both Knees, with diminution of Electro-Contractility—History pointing to Alcoholism.

Lusby S., æt. 33.

August 20, 1884.—About five weeks ago noticed the ankles turn in as he walked; this began in the right ankle. Rather later, while trying to play leap-frog, he fell on his knees, and his "knees have been weak" ever since.

Walks now with two sticks, unsteadily, and looking at his feet. Gets up from chair with difficulty. Can move the feet freely, but has difficulty in extending the knees. Patellar tendon reactions absent on both sides. Extensor muscles on anterior aspect of thighs contract when percussed. The faradic reaction is absent in these muscles, though present in the muscles below the knees. No pains. No anæsthesia. The pupils act to light. Ordered tr. nucis vomic. ℥x. ter.

August 27.—He now states that ever since the legs have been bad, the right third finger has been apt to get flexed into the palm. The hands, he says, suffered some loss of power a week after the legs. His daily consumption of beer is, he says, four or five pints at least, and very often more, but he promises to abstain altogether. Pot. iod. gr. v., rising to gr. x., to be added to the medicine.

October 8.—Slight œdema of both ankles.

October 22.—There is now decided wasting of the vasti of both thighs. They do not react to strong faradism. The galvanic appliances are very imperfect, but it can be made out that these muscles act to strong voltaic alternations.

December 10.—Has improved very much. Can walk without a stick. Gets up from chair naturally. Considerable return of power in the extensors of the knees, but still no patellar tendon reaction. "Pins and needles" in the right arm on waking from sleep, but this he ascribes to lying on it.

January 14, 1885.—Practically well. Says he can do everything short of running.

The extensor paralysis, and the man's own account of himself suggested alcoholic neuritis; nevertheless sensory symptoms, viz., pains, anæsthesia, tenderness, &c., and affection of the mental faculties appeared to be absent.

The next two cases are much more typical in these respects.

Case X.

Alcoholic Neuritis.

Martha Elizabeth L., æt. 32, married.

September 1, 1886.—Is wheeled into the out-patient room, being quite unable to walk. Has been gradually losing power in the legs during the last eighteen months. Her illness began with a pain at the heart, which still remains; then gradual loss of power in the legs, accompanied with aching and numbness in them. During the last eighteen months she has got so much worse that now she can only stand with assistance. The hands also are becoming numb. She says that sometimes she has difficulty in micturition, sometimes incontinence of urine.

The memory is very bad; she will ask the same question over and over again, and forgets having seen people who have been with her quite recently. Though confined to bed, she will say that she has been out shopping, &c.

Tongue slightly furred; heart-sounds normal; no enlargement of liver to be felt. Has little power of moving feet either towards dorsal flexion or the reverse position. Calves very tender to handling. Patellar tendon reactions absent. Electrical reactions not taken. Pupils act to light.

The history was obtained from an unmarried sister who brought her. The paralysis was thought to be due to a series of frights. The symptoms seemed to me so characteristic of alcoholic paralysis that I told the sister what I thought. She at once said that the patient was given to continuous drinking; which had been the source of much distress to her family, but they had never suspected the disease to have originated in it. Now, however, she was at her mother's house, and unable to help herself; and the sister promised that abstinence should be enforced.

To take as medicine sodii iodid. gr. v., sodii bicarb. gr. x., infus. gentian co. ℥i ter die.

October 13.—The paralysis has improved remarkably. She can walk with very slight assistance. Can dorsi-flex left foot readily, and right partially. Can stand with eyes shut. Still has the pain at the heart. Complains also of numbness down the left side; of occasional numbness in the hands, with tendency to drop things.

In spite of this improvement in the paralysis, the mental symptoms, I am told, remain just the same.

Admitted under care of Dr. Buzzard, who subsequently confirmed the diagnosis.

In the last case which I shall give I was able to watch recovery from a state of paralysis which had been considered hopeless, viz., inability to walk or stand, wasting of some muscles, spasm of others. The good result was due, I believe, first and foremost, to withdrawal of alcohol, for there was a marked and rapid improvement when the patient was removed from home and placed under proper supervision; secondly, to the skill and patience of the lady in whose home she was placed; thirdly, to the persistent application of the constant current and of massage.

Case XI.

Alcoholic Neuritis.

The patient, æt. 39, was taken ill rather suddenly towards the end of October 1885. Pains in the legs came on, according to her account, after a drive upon a cold day; these pains, which were supposed to be rheumatic, were followed by loss of power and numbness. She had to take to bed about two weeks after the onset. Soon after this a squint was noticed. The left hand became numb and painful; there was embarrassment of movement in the left thumb. She could scarcely move the legs; they were tender to touch.

The mental condition caused anxiety to her friends. Thus she would ask the same question over and over again, make out the same cheque several times over, write letters and never post them; did not know how long she had been ill; believed she had been walking about, when as a fact she was bedridden; she was at times irritable, but often remarkably cheerful, appearing not to appreciate her serious condition. She slept badly; took food at first badly, afterwards in fair quantity.

I saw her two or three times between November 1885 and February 1886, and was able to make out the following facts:— There was some anæsthesia of the feet and legs and considerable muscular wasting. There was tonic spasm of the ham-strings, so that she could not straighten the knees, and attempts at passive extension caused much pain. The patellar tendon reactions were absent. Only a rough and partial electrical examination could be made, but this showed that in the anterior tibial group, at any rate, reaction to both currents could still be obtained. The nerve-trunks of the left arm, and I think of the legs also, were tender to pressure; some of the muscles of the legs were tender. The pupils acted normally; the ocular movements were (when I saw her) normal; there was no nystagmus. The pulse was at first

somewhat frequent and occasionally irregular; the heart sounds were normal. I could discover no hepatic enlargement.

While in bed at home there was certainly a little improvement; the threatened paralysis of the left upper limb passed off; and when I saw her just before her removal, though totally unable to stand, she could, while sitting on the edge of the bed, move the feet and toes, bend the knees, and move the hip-joints, but she still could not extend the knees.

She was placed in a nursing-home on March 2, 1886. By March 8 she could make a few steps alone, though in a shuffling, unsteady fashion. She could straighten the right knee quite, and the left nearly. Recently, however, the left great-toe had become dropped. She also had a good deal of headache. Accurate electrical observations were difficult to make on account of the patient's dislike of the battery, but it may be stated that at this time the anterior tibial group of both sides acted to faradism and galvanism, the extensors of the thighs to neither current (except the right external vastus, which acted to galvanism); the ham-strings were doubtful.

March 15.—Can get up from chair and walk across room alone. Walks with her body bent forward in a shuffling way. When she begins to walk the calves become painful and cramped: after persevering a little this improves.

Both internal vasti now begin to act to strong galvanism (15 mille-ampères or more, KSZ > ASZ).

March 26.—Can now walk up and down stairs; can dress and undress herself. The gait, though more natural, still has the same peculiarities. The drop of the left great-toe has disappeared. The plantar surfaces of the toes in both feet and part of the left sole are very tender to touch, so that she can hardly bear the movements of massage, and there is some numbness and impairment of tactile sensation here. The muscles of the legs have regained volume considerably, and the thighs are beginning to do so.

After this she continued to improve, though by no means so rapidly as at first. By April 14 and 15 galvanic reaction returned in the biceps cruris.[1] Such wasting as is still left is now most visible in the left biceps.

By April 19 she could go out walking, and on April 28 she went to the seaside. The day before she left I was able to satisfy myself that all the muscles reacted both to faradism and

[1] Right biceps cruris, KSZ, ASo, at 15 mille-ampères. Left do. (April 14), ASZ, KSo, at 20 mille-ampères. Left do. (April 15), ASZ=KSZ, at 20 mille-ampères. The left biceps was the only muscle in which I ever found qualitative electrical change.

galvanism; and further, that the patellar tendon reactions, though still absent under the ordinary method of examination, could be brought out by Jendrassik's method.

The mental condition was never, during the time that I had charge of her, so bad as it was reported to have been at first. There was some further improvement, I think, during the two months of treatment, but it was not to be compared with the improvement in the paralysis. Her memory certainly remained very bad. She was extremely thirsty, drinking an enormous quantity of soda-water and lemonade. The urine contained neither albumen nor sugar. The diagnosis of alcoholism, made originally from the nervous symptoms, received confirmation from other sources.

October 27, 1886 (*i.e.*, about a year from onset, and about six months from cessation of treatment).—Physically and mentally the patient appears to have made further improvement. Beyond a slight suspicion of stiffness there is nothing remarkable about her gait.

TWO CASES

OF

CEREBRAL ANEURYSM IN YOUNG PERSONS ASSOCIATED WITH ENDOCARDITIS,

WITH

REMARKS ON THE CONNECTION BETWEEN ANEURYSM AND EMBOLISM.

BY

PERCY KIDD, M.D.

In his well-known paper "On the Formation of Aneurysms," published in 1870 in Vol. vi. of the Hospital Reports, Dr. Church discussed the pathology of cerebral aneurysms occurring in early life, and drew up a table of thirteen cases in subjects under twenty years of age, recorded by various observers. This table included two cases that he had met with himself, and two cases examined by Dr. Kirkes at St. Bartholomew's, but not hitherto published.

In his paper Dr. Church strongly supported the embolic origin of such aneurysms, and attributed to Mr. Tufnell, Mr. Holmes, and especially to Dr. J. W. Ogle, the credit of having drawn attention to the possible relation of embolism to aneurysm.

The title of Mr. Tufnell's paper, "On Valvular Vegetations as Productive of Arterial Disease," shows clearly that he believed in the existence of such a relation.

But the case which suggested this view was not an uncomplicated one; for the patient, a young man aged 25, was suffering from endocarditis combined with syphilis. A pulsating tumour developed in the popliteal space with symptoms of vascular

obstruction; collateral circulation soon became established and the tumour disappeared. Mr. Tufnell's view was that the tumour was due to a temporary dilatation of the artery behind the obstruction. After death the artery was found to be quite healthy in its upper part, but its lower end was converted into a fibrous cord. Although this seems to have been the first case recorded in which any writer expressed himself in favour of the connection between embolism and aneurysm, a perusal of Dr. Kirkes' classical memoir on embolism,[1] published a year previously, will show that he had to some extent anticipated Mr. Tufnell. Speaking of embolism, in one place he says: "In consequence of the obstruction thus produced, the blood impelled up to the obliterated part will naturally tend to induce distension of the coats of the vessel immediately behind the seat of obstruction, and it may be a question whether many of the aneurysmal pouches found in the cerebral arteries may not originate in this way."

In Dr. Church's paper will be found an account of the cases bearing on this point recorded up to 1870, so I will only refer incidentally to the views of some of the different authors. Dr. Church himself was led to the conclusion that embolic aneurysms arise when an artery is partially obstructed, "the dilatation consequent on the partial obstruction causing interference in the nutrition of the contiguous parts as well as of the walls of the artery itself; the weakened arterial wall yields at the spot where it is least supported by the surrounding tissues, and gradually an aneurysm is formed." Dr. Church refers to Dr. Ogle's[2] attempt to produce aneurysm in an ass by the introduction of dried fibrine into the arterial stream, but considers that an aneurysm of the mesenteric artery found after death was the result of the presence of parasitic worms, strongyli, coiled up in the artery at the aneurysmal part, and was not due to fibrinous embolism.

In 1872 Dr. Joseph Coats[3] published two cases of aneurysm of cerebral arteries in young people. In one, a man of 25, there was an aneurysm in a cavity in the brain substance situated behind the right lateral ventricle. The heart presented the appearances of ulcerative endocarditis; the spleen was very large but contained no infarcts, though in the kidney there was evidence of infarction. In the second case, a man aged 28, who died of cerebral hæmorrhage, with no history of any previous illness, a cerebral aneurysm was found, but there was no disease

[1] Med. Chir. Trans., vol. xxxv. pp. 202, 203.
[2] Medical Times and Gazette, February 24, 1866.
[3] Glasgow Med. Jour., vol. v. p. 433.

of the heart or other viscera. Dr. Coats regarded embolism as a probable cause of aneurysm in some instances, but did not express himself very decidedly. However, in his recent "Manual of Pathology" he accepts the embolic theory for certain cases, and seems to embrace the views of the next author, to whom reference must now be made.

Ponfick,[1] in 1873, wrote a paper on "Embolic Aneurysms," based on seven cases, in all of which the presence of an embolus in the affected artery was held to have been demonstrated. The ages of the patients varied from 20 to 40, the average being about 27. In five of these cases an aneurysm was found on one or more of the intracranial arteries, including also the splenic artery in one instance, and in the two remaining cases the superior mesenteric artery presented an aneurysm.

In nearly every case the affected vessel was plugged by a calcareous mass, which Ponfick believed to have come from calcified vegetations on the cardiac valves. In all the seven cases the heart presented the condition termed by German writers "endocarditis verrucosa," and in every instance the large warty vegetations were more or less calcareous. Ponfick seems to attribute some importance to the obstruction produced by the embolus being incomplete, but believes that there are three principal conditions necessary for the formation of an embolic aneurysm.

First, the physical qualities of the embolus, which is usually hard, rigid, and pointed; second, the position of the embolus, just beyond the division of an artery, not at the point of bifurcation or on the proximal side of it; third, the nature of the tissues surrounding the artery, which must be soft and yielding, like the mesentery, hilus of the spleen, or brain, as distinguished from solid unyielding organs such as the kidney. He considers that the sharp-pointed embolus perforates the vascular wall, and so leads to weakening and bulging at the seat of obstruction. He admits, however, that the plug may occasionally present the usual fibrinous appearance. The second of the foregoing conditions is regarded by Ponfick as fundamental. I shall return to the views of this author later on.

Dr. Goodhart[2] in 1877 published cases of aneurysm of the cerebral and brachial arteries associated with ulcerative endocarditis, and attributed the aneurysm to a peculiar virulence of the clot, which led to local changes in the vessel at the point of obstruction. Some years later, in the discussion on Mr. Parker's paper,[3] to be mentioned directly, Dr. Goodhart said that his earlier impressions had been confirmed, and stated his belief that

[1] Virchow's Archiv., Bd. 58.
[2] Path. Soc. Trans., vol. xxviii.
[3] Proc. Med. Chir. Soc., vol. i.

these embolic aneurysms are always associated with what is usually called ulcerative endocarditis, but which he preferred to call fungating endocarditis—a severe and excessive form of endocarditis. He explained that aneurysms only form where the vessels are unsupported, and that dilatation takes place at the seat of the impacted embolus, not behind it. The discussion referred to arose out of a paper by Mr. Parker[1] in 1884 on a case of inguinal aneurysm in a boy of 12, suffering from aortic valvular disease.

After death an aneurysm was found on the femoral artery just above the origin of the profunda. There was no disease in other arteries. The aortic valves were fringed with large loose vegetations. The author was not satisfied as to the embolic origin of the aneurysm, but preferred to explain it by the occurrence of a similar change in the artery to that which had involved the valves. At the discussion on this paper, Mr. Holmes propounded the view set forth in his "System of Surgery," that embolism is undoubtedly one cause of aneurysm, and that aneurysm results from dilatation of the artery behind the seat of obstruction. This subject does not seem to have attracted so much attention abroad as in England. In the last edition of Cornil and Ranvier (1884) I find no mention of embolic aneurysms; and Ziegler, in his "Pathological Anatomy," 3rd edition, 1885, vol. ii. p. 77, dismisses the question with a short reference to Ponfick's views. The English text-books of pathology, on the other hand, generally recognise the relation of the two processes.

Having given this brief abstract of the views of the various authors, I wish now to describe two cases of cerebral aneurysm that I have met with myself which seem to illustrate and accentuate certain aspects of the question.

Case I.

John L., æt. 24, died in the Brompton Hospital in August 1883. The patient, a gasfitter by trade, came under my notice about a year previously as an out-patient, and continued to attend off and on for five or six months.

He gave a history of cardiac symptoms dating from an attack of rheumatic fever in 1880. There were signs of hypertrophy and dilatation of the left ventricle and a double aortic murmur. A mitral regurgitant murmur developed soon afterwards. The patient's progress during the time he was an out-patient was almost uniformly unsatisfactory, and he was admitted into the Hospital under Dr. Williams early in 1883. Not long afterwards

[1] Med. Chir. Trans., vol. lxvii.

he had a sudden attack of right hemiplegia and aphasia. He recovered some slight amount of power, especially in the leg, but the aphasia persisted, and rigidity of the arm gradually developed. Unfortunately the clinical notes were lost after the patient's death, so that I can give no more particulars of the case beyond saying that he died rather suddenly. The above facts I remember well, as I had charge of the patient for some time after the attack of hemiplegia, during Dr. Williams' absence.

Necropsy.—On removing the skull-cap and peeling off the dura mater, both frontal lobes were covered by a layer of blood, and on the left side the frontal and parietal regions were flattened. Extravasated blood was found in greater abundance over the lower aspect of the frontal lobes, extending over the whole inferior surface of the brain. A large dense blood-clot the size of a hen's egg occupied the commencement of the left Sylvian fissure. Embedded in this clot was an aneurysm of the internal carotid artery rather larger than a pea. The aneurysm, which was sacculated, sprang from the carotid artery just at its termination, so that the middle cerebral artery seemed to be given off directly from the aneurysm, the opening of the vessel into the aneurysm being narrowed, and only admitting a fine probe. The walls of the sac were much thickened in general, but at its under surface the coats were thin and infiltrated with soft, dark post-mortem clot, as if rupture had occurred here. The internal carotid artery, where it entered the cavernous sinus, contained a firm adherent thrombus of darkish colour. The aneurysm and the portion of the artery between it and the thrombus contained dark, soft, post-mortem clot. No thrombus was found in the middle cerebral or in any of the cerebral arteries, and the vessels throughout were perfectly healthy. The blood had made its way into the left lateral ventricle in the neighbourhood of the Sylvian fissure, and the middle and inferior frontal convolutions in this region were almost completely destroyed. Traces of yellow softened cerebral matter were seen in the site of these broken-down convolutions and in the convolutions bordering on the fissure of Sylvius. Patches of yellow softening were also discovered in the nucleus caudatus and in the anterior part of the thalamus, all on the left side. The left nucleus lenticularis was completely ploughed up, and to a less extent the posterior parts of the thalamus. No yellow softening was detected in these parts.

The right lateral ventricle contained a little blood-stained serum, and the right hemisphere throughout showed no sign of disease.

A small amount of blood was extravasated under the pia

mater almost throughout the course of the spinal cord. Nothing abnormal was noticed in the pons or medulla oblongata, but the lateral column of the cord appeared pinker on the right than on the left side.

The heart weighed 15 oz. Left ventricle hypertrophied and dilated. Aortic valves incompetent, thickened, and beset with soft pendulous vegetations. Mitral valves also thickened and fringed with small granulations. One of the chordæ tendineæ had ruptured, and a large vegetation was attached to it. Lungs congested and emphysematous; some fibro-caseous nodules and groups of miliary tubercle in both apices. Spleen, 17½ oz., enlarged, containing some yellowish infarcts. Kidneys, 14 oz., rather small; capsule adherent, surface finely granular. Liver, 4 lbs. 11 oz., enlarged; in an early stage of cirrhosis. The colon contained a few tuberculous ulcers.

Case II.

William B., æt. 27, a baker, came to the out-patient room at the Brompton Hospital on August 31, 1886, and was seen by Dr. Haig, who was doing my work for me at the time. Dr. Haig has kindly given me the following account of the case.

The patient was brought in supported by the nurse and porter, looking extremely ill, and having much dyspnœa. There was a history of "typhus and brain-fever" in May last, and he had never been well since. He said that he had suffered from cough for the last month, and had been obliged to give up his work two weeks ago. He complained of severe headache and of shortness of breath on exertion. The dyspnœa got better after he had rested a little, but he remained very pale and ill. The pulse was visible in the arteries, and was short and aortic in character. Physical examination revealed considerable enlargement of the heart, and there was a double aortic murmur.

The patient vomited after he was examined, and continued to retch for some little time. All along he complained of the most severe pain in his head. Dr. Haig thought that anæmia of the brain from failure of the heart might perhaps account for his headache; but from the vomiting he was more inclined to attribute the symptoms to some cerebral lesion.

Just as the patient was about to be removed to the wards he suddenly became unconscious, and it was now noticed for the first time that his pupils were unequal, the left being considerably smaller than the right. A hypodermic injection of æther was given, but the patient never rallied, and died in a few minutes.

I made a post-mortem examination next day. On removing the skull-cap and reflecting the dura mater, a large effusion of blood was seen on the surface of the right hemisphere in the frontal and parietal regions, extending a little way along the Sylvian fissure, but not reaching the base. On removing the brain, the blood was found to come from a cavity of the size of an unshelled walnut situated at the anterior extremity of the frontal lobe. This cavity was filled by a firm, dark, rounded blood-clot, evidently of older date than the mass of the effusion. The brain tissue around this spot was softened and marked with punctiform hæmorrhages, but no aneurysm or ruptured vessel could be found either in the round clot or in the softened parts, though the latter were carefully examined microscopically with a low power for miliary aneurysms. On further examination, an old ochre-coloured hæmorrhage, of irregular shape and small size, was found in the white matter of the right temporo-sphenoidal lobe. The hæmorrhage corresponded to the posterior extremity of the first temporo-sphenoidal convolution, just where it fuses with the supra-marginal gyrus. Between the hæmorrhage and the cortex in this region there was a firm rounded body of the size of a large pea attached to a small vessel. On section this proved to be an aneurysm with thick walls filled with a firm dark thrombus. Neither the hæmorrhage nor the aneurysm were visible until the brain was sliced horizontally, and the cortex here and elsewhere, except over the tip of the right frontal lobe, was unsoftened and had a healthy appearance. The left hemisphere, pons, and medulla were unaffected. The vessels were everywhere quite healthy and free from obstruction, as far as they could be traced. No disease of the membranes or calvaria was present. The heart weighed 16 oz., and was much dilated in general, the left ventricle being somewhat, but only slightly, hypertrophied. The aortic valves were extremely incompetent, and were only represented by two cusps. The valves were thickened, their edges ragged and soft, and several large irregular vegetations were attached to them. One segment of the valve, the posterior or mitral, had ruptured, and a long fragment hung freely down into the cavity of the ventricle, and had caused ulceration on the subjacent large anterior curtain of the mitral valve by friction. This same aortic cusp presented also a small rounded perforation lower down. The other aortic valve showed no ulcerative changes, and the vegetations on it were slightly impregnated with calcareous matter. There were no granulations on the mitral valves.

The spleen weighed 26 oz., and was very large and soft, but showed no infarction. Kidneys, 14 oz.; punctiform congestion

of cortex. Liver, 4 lbs. 12 oz., large and congested. There were several small hæmorrhagic patches under the mucous membrane of the small intestine, but no ulceration. Other organs normal.

A consideration of these two cases will show that they possessed certain features in common. In both the aneurysm was sacculated, and in both there were vegetations on the cardiac valves. The second case presented also the features of ulcerative endocarditis. In Case I., the endocarditis could hardly be described as ulcerative, though the ruptured chorda tendinea pointed to an intense form of disease hardly to be separated from the typically ulcerative variety.

There was some calcification of the vegetations in Case II., but not in Case I.

It is remarkable that the only evidence of embolism in the ulcerative case consisted in the intestinal hæmorrhages and the cerebral aneurysm. The spleen, though very large, contained no infarcts, and yet this is just the sort of case in which the conditions for embolism must have been most favourable. The same fact has been noted in other cases of endocarditis ulcerosa, where an enormous spleen existed without any evidence of embolism.

In the first case there was evidence of embolism of the splenic and internal carotid arteries. Apart from the comparatively recent thrombus blocking the latter vessel in the cavernous sinus, the clinical history and the anatomical appearances strongly suggest, if they do not actually prove, that another embolus must have lodged near the origin of the left middle cerebral artery at an earlier date. The symptoms, sudden right hemiplegia and aphasia, indicated interference with the circulation in the trunk of the left middle cerebral artery. The subsequent partial recovery was probably due to restoration of the circulation in the main Sylvian artery in consequence of disintegration and detachment of the plug, and impaction of small fragments in some of the terminal branches of the artery. This explanation is warranted by the patency of the carotid artery at the seat of the aneurysm, and by the irregular distribution of the softening in the left hemisphere, corresponding to certain sections of the area of distribution of the middle cerebral artery. It will be remembered that the areas affected were the posterior parts of the middle and inferior frontal convolutions, the convolutions bounding the Sylvian fissure, the nucleus caudatus, and the anterior part of the thalamus.

Whether the lenticular nucleus had undergone softening or not it was impossible to say, as this part was reduced to a soft pulp by the extravasated blood. The upper part of the ascending parietal and ascending frontal convolutions were not soft-

ened. The view that an embolus had lodged at the division of the carotid into the middle cerebral and anterior cerebral arteries is strengthened by the fact that the origin of the middle cerebral artery was contracted, which would be explicable on the hypothesis of embolism at this point, setting up gradual cicatricial changes after the lapse of some months.

To return to the case of ulcerative endocarditis. It is interesting to note that the aneurysm, which developed on a small artery in the area of distribution of the middle cerebral artery, was not situated at the surface of the brain, but was embedded in the outer part of the white matter just beneath the cortex, and did not present externally. From the old hæmorrhage near it, it would seem that the aneurysm had leaked at one time, but a firm thrombus in process of organisation filled the vessel.

Although no aneurysm could be detected at the seat of fatal hæmorrhage in the anterior lobe, it is more than probable that a small aneurysm was the cause of the extravasation. I believe that it is unusual for an embolic aneurysm to develop in the substance of the brain, though cases have been recorded; but from the analogy of the miliary aneurysms of Charcot and Bouchard there is nothing unlikely in such an occurrence. The common situation of embolic aneurysms on the surface of the brain is probably to be explained by the fact that the embolus is usually of large size, and is arrested before it reaches the medullary arteries. Moreover, the farther an artery is removed from the centre of the circulation, the less exposed is it to the force of the powerful stroke of a hypertrophied ventricle, which must contribute to the aneurysmal bulging, in some cases at least.

Case I. bears out Dr. Church's view of the importance of the obstruction caused by the embolus being incomplete. It may be, as Dr. Church suggests, that when the obstruction is absolute, thrombosis spreads rapidly from the proximal side, until the next branch is reached, and the firm thrombus thus formed protects the weakened spot below from the distending influence of the circulation. This point is also emphasised by Ponfick.

Both cases detailed above support Dr. Goodhart's view that the development of these aneurysms depends on some peculiarly virulent nature of the embolus, derived from a severe endocarditis, and the credit of having first urged this explanation belongs to Dr. Goodhart. But it may be doubted whether the presence of large vegetations is a necessary condition, as he seems to think. For instance, in one of Dr. Church's cases, No. III., it is stated that there was a row of firm pale granules along the border of the mitral valve. It is worthy of note that in this patient, as in the first of my cases, there was evidence

of tuberculosis of the lung and intestine, one lung containing numerous small cavities. It is possible that the endocardial vegetations acquire some special property, as the result of the tuberculous process and its attendant pyrexia; but this at present is mere speculation. Our knowledge of the different clinical forms of malignant endocarditis has been much added to of late, but we are still ignorant of the precise conditions that lead to the transformation of a simple into an infective or ulcerative endocarditis. It is very difficult to distinguish certain fulminating cases, with multiple embolism, rigors, &c., from the truly ulcerative form, which differ probably in degree only, although some German writers endeavour to make the presence of retinal and cutaneous hæmorrhages or erythemata a distinguishing mark of the latter variety. It is not improbable that the term "arterial pyæmia," suggested some years ago by Dr. Wilks, may be found to represent more truly the nature of the disease in some instances.

In other words, the existence of endocarditis is not an essential condition, the disease being of an infective type and closely related to other septicæmic affections. There are as yet no data for determining whether the very exceptional occurrence of aneurysms in young people, in the absence of arterial disease or endocarditis, is to be explained by embolism. Such cases have been recorded by Drs. Hare,[1] Coats,[2] Henry Smith,[3] and Mr. C. J. Wright.[4] Possibly some of these may be allied to the arterial pyæmia of Dr. Wilks, and may also depend on embolism.

Mr. Holmes' view that aneurysm results from dilatation of the artery behind the seat of obstruction cannot be regarded as satisfactory, though it seems at first sight to receive support from Mr. Tufnell's case. This case, however, presents difficulties which forbid any general conclusion being drawn from it. In answer to Mr. Holmes' insistance on the occasional dilatation of arteries behind a ligature, Dr. Goodhart pertinently remarks, "Aneurysm is not a risk that a surgeon apprehends when he places a ligature on an artery."

To revert to embolic aneurysms of the cerebral arteries, as being the best known, it appears that in most of the recorded cases the aneurysms were sacculated, a condition not easily accounted for by a purely mechanical explanation; and considering the frequency of embolism of the cerebral arteries, aneurysm ought not to be very uncommon, whereas it is decidedly rare if we exclude cases complicated by arterial disease. Again, the numerous researches on the experimental production of embolism

[1] Lond. Jour. of Med., 1850, p. 824.
[2] Loc. cit.
[3] St. Barth. Hosp. Rep., vol. xviii.
[4] Lancet, November 11, 1882.

carried out by Virchow, Cohnheim, Litten, and others, might fairly be expected to supply some instances of aneurysm if the mechanical theory were true, whereas no such evidence is forthcoming. Dr. Ogle's experiment quoted above has been shown by Dr. Church to be inconclusive.

Ponfick (*loc. cit.*) enters at great length into the causation of embolic aneurysms. But of the three main conditions laid down by him, viz., a hard and more or less pointed embolus, impaction on the distal side of a bifurcation, and a soft yielding tissue surrounding the artery, the last alone proves to be a constant factor. It is remarkable that in all his seven cases there were calcareous vegetations on the valves, and the embolus was invariably found beyond the point of division of an artery. He attaches the greatest importance to the second condition, and believes that such a position of the embolus throws more strain on the obstructed artery than the commoner situation at a fork. Nevertheless a reference to other cases shows that the aneurysm is quite as often situated at the bifurcation of an artery or on the proximal side of it. Ponfick, like Dr. Goodhart, insists on the fact that the aneurysm develops at the seat of obstruction, not above it; and it is to be observed that all his cases presented large fungating vegetations, and probably were closely allied to ulcerative endocarditis. Enough has been said to prove that although Ponfick's cases lend countenance to his explanation, his views are not generally applicable. On the whole, Dr. Goodhart's explanation best meets the exigencies of the case, and the evidence at present available seems to justify the following conclusions.

Aneurysm in certain cases results from embolism in virtue of some noxious property possessed by the plug, which causes local changes at the seat of obstruction, and thereby leads to weakening of the vascular walls. The embolus in nearly all cases is derived from vegetations on the cardiac valves, which are commonly of a warty nature, and betoken a severe form of endocarditis. The embolus may be arrested at the bifurcation of an artery or on either side of it. The arteries that are prone to become the seat of embolic aneurysm are situated in soft and yielding tissues.

Lastly, the rare cases where aneurysm has been observed in young people, in whom no arterial disease or endocarditis existed, have yet to be explained.

ON THE

SIGNIFICANCE OF BLOOD-SPITTING.

BY

VINCENT D. HARRIS, M.D.

According to the statistics which have been compiled by observers at various times during the present century, blood-spitting to a greater or lesser degree is one of the most constant symptoms of pulmonary consumption.

The laborious minuteness of M. Louis,[1] whose elaborate work on phthisis established his reputation, as Dr. C. J. B. Williams[2] tells us, for statistics, which he held to be the only proper basis of medicine, gives us the earliest important information on the subject. This writer, recording a very precise account of his experience, states that of 87 cases of phthisis, hæmoptysis to a greater or less extent occurred in 57, or in about two-thirds of the total number. In his account he proceeds to define what he considers to be *severe* and what *slight* hæmoptysis. Severe hæmoptysis being "such discharge as shall within a short space of time—a few minutes, quarter of an hour, or an hour—give rise to the evacuation of more or less fluid and spumous, or occasionally blackish and coagulated blood." While slight hæmoptysis occurs "when only a few mouthfuls of spumous blood, either pure or mixed with sputa, are voided; and such hæmoptysis sometimes lasts for several successive months."

It is convenient to have such accurate information as to what a writer means by terms so relative as these, especially as they

[1] "Researches on Phthisis," first published, Paris, October 1, 1825.

[2] "Life and Work," p. 43. Dr. Williams describes M. Louis from personal observation. "In the same ward we often saw a tall solemn man with spectacles diligently taking notes, not accompanying the physicians. This was M. Louis. . . In that line (statistics) he became famous, but he was equally remarkable for the gloominess of his predictions and the inefficiency of his practice."

certainly do not always connote the same in medical literature. In this paper the words are used with much the same signification; but slight hæmoptysis we consider to include as well, cases in which less that mouthfuls are spat up at a time, provided that the spitting of the blood be prolonged for a sufficient time for the total quantity voided to amount to an ounce or more.

Pollock[1] in his classical work has not treated the statistics of hæmoptysis from the same standpoint as Louis, but he says that hæmoptysis is common to all stages of phthisis, but especially remarkable in two, viz., in the first stage and in the third stage, but "often in a slight form throughout the whole course of the affection." Without quoting any further authorities, who agree in the main with Louis, but taking the notes of 106 of my cases of phthisis at the Victoria Park Chest Hospital, chiefly from the years 1882–83, rejecting all doubtful cases and those in which it was not distinctly stated whether hæmoptysis had or had not occurred, we find that 61 were males and 45 females. Of the 61 cases, 14 did not have hæmoptysis before or during treatment, whilst in 47 hæmoptysis of a more or less severe kind occurred before or during treatment; of the 45 women, 12 did not present the symptom. From these statistics it will be seen that only one person out of every four affected with phthisis escaped hæmoptysis. Profuse or severe was much less common than moderate hæmoptysis. Slight hæmoptysis occurred in about half the total number of cases. Several of the patients had had hæmoptysis many years before treatment, one patient seven or eight years before, two had had it five years before, two four years, several two years, and so on. The majority had only spat blood on one occasion, but some had done so often. The spitting lasted for days, sometimes for weeks, and in one case for three months.

Hæmoptysis is, then, as we have seen, a very constant symptom of phthisis pulmonalis: so constant a symptom indeed, that many physicians in the past have regarded it, and many physicians of the present day do regard it, as always indicating lung-disease. Many even go so far as to assert that it is always a symptom of the established disease, making the relationship between the two simply one of cause and effect.

If this relationship be indeed as simple as this, no wonder that those who spit blood should so often be depressed beyond measure, and shocked at the prospect before them. The question then arises, is the relationship so simple? It is to this that I propose to offer some remarks, chiefly because, although this relationship was very hotly discussed some years ago, it has not

[1] Elements of Prognosis in Consumption, chap. xix.

been much brought forward since the discovery of the bacillus tuberculosis. This discovery has rendered it necessary to review the ætiology and pathology of phthisis. The subject of the ætiology and pathology of phthisis indeed is so wide and important a one that everybody appears prepared at any time to discuss it; and the literature which at once accumulates touching any new theory or discovery testifies to the warm feelings with which upholders of one or other doctrine are prepared to do battle for their cause.

The ætiology of phthisis had been recently brought prominently before the profession in this country in Dr. Andrew's[1] lectures delivered before the Royal College of Physicians in 1884, by Dr. Douglas Powell,[2] and Dr. Burney Yeo,[3] and incidentally by Dr. Herman Weber,[4] and the pathology of phthisis in connection with the bacillus by Sir A. Clark,[5] Drs. Green,[6] Wilson Fox, and Moxon, Mr. Watson Cheyne,[7] and others. As we have said, however, blood-spitting in relation to the ætiology has not been much, if at all, touched upon.

The cases of hæmoptysis which we propose to consider include only those in which the hæmorrhage occurred from the pulmonary mucous membrane; all doubtful cases, and also those in which an aneurysm leaks into, or by pressure ulcerates into, the trachea or bronchi, as well as those cases due to pulmonary embolism, pressure of a new growth, or inflammation producing hæmoptysis, are omitted. Bleeding from teeth, gums, mouth, pharynx, and nose; swallowed blood; stated vicarious menstruation; hæmorrhage in scurvy, purpura, hæmophilia, and in fevers, *e.g.*, typhus, measles, are also not included. The cases are restricted to those of what may be called *true hæmoptysis*, which correspond to the blood-spitting alluded to by Louis and others.[8]

As regards the amount of blood spat up, slight hæmoptysis seems as common in phthisis as severe; and so nothing is to be prognosed, simply because the blood-spitting happens to be in small quantity. Louis found that the hæmoptysis was slight in half his cases, and this accords with my experience. In the majority of cases, hæmoptysis, either in a severe or slight amount, is the effect, or denotes as a matter infinitely probable, the existence of pulmonary consumption; is, in fact, a sign of lung disorganisation. It may occur early or late; it may even suffo-

[1] Lumleian Lectures, 1884, Brit. Med. Jour., p. 655, 709, 731.
[2] On the Causative Relations of Phthisis, Brit. Med., vol. ii. 1884, p. 698.
[3] On Some Points in the Etiology of Phthisis, read before the Medical Society, April 1885.
[4] Croonian Lecture, 1885.
[5] Brit. Med. Jour., 1884, vol. ii. p. 93.
[6] Brit. Med., vol. i. 1885.
[7] Brit. Med., vol. i. 1885, p. 169.
[8] See Watson's Principles and Practice of Medicine, vol. ii. p. 166, on this point.

cate the patient by its amount on the first attack. It may, as Niemeyer has pointed out, hasten the end in a confirmed case or confirm a doubtful case. It sometimes seems to improve the condition in confirmed phthisis. It may be repeated several times; it may continue for days, for weeks, or even for months, more or less. Now, about all the foregoing there is scarcely any difference of opinion; it is to what follows that many take exception. The majority of the cases are, then, merely phthisical cases showing the accidental symptom of hæmoptysis.

What is the relation between blood-spitting and pulmonary consumption in the remainder?

Firstly, there are some patients who at the time of the blood-spitting exhibit no signs, or even symptoms, of phthisis, but after a varying time, or after repeated attacks, show both signs and symptoms of consumption.

Secondly, there are some patients who at the time of the blood-spitting exhibit no signs, or even symptoms, of phthisis, and who do not, even after repeated attacks, give any manifest signs or symptoms of phthisis.

To these two propositions also little exception can be taken; it is about the explanation of them that controversy rages. Let us consider the two classes of cases in order.

The first class of cases has been admirably described by Andral.[1] Thus, "among the phthisical patients observed at La Charité, several told me their disease commenced in the following manner:—They had always enjoyed good health; their constitution was strong; they had had no cough previous to their hæmoptysis; all on a sudden, in the midst of a state of health very good up to that period, they were seized with a profuse spitting of blood; this ceased at the end of a shorter or longer period, and all the symptoms of phthisis gradually declared themselves." In other individuals, Andral goes on to state, phthisis did not develop until after a second or third hæmoptysis in each case, probably arising from a cold, or what not. These cases no doubt correspond with those called by Morton *phthisis ab hæmoptoë*, and also to Niemeyer's[2] cases of "capillary hæmorrhage, either bronchial or pulmonary, which does not unfrequently lay the first foundation for pulmonary consumption in persons in whose lungs neither tubercles nor pneumonic deposits previously existed; this is brought about by blood which remained behind in the alveoli, as well as the products of the inflammation which this blood caused undergoing cheesy metamorphosis. . . . That

[1] Clinique Medicale, Sydenham Soc. Trans., p. 436.

[2] Clinical Lectures on Pulmonary Consumption, by Felix v. Niemeyer, New Sydenham Soc. Trans., by Dr. Bäumler, pp. 39, 40.

portion of the blood which remains behind in the alveoli, and which, together with the pneumonic infiltration, undergoes cheesy metamorphosis, not unfrequently giving rise to an eruption of miliary tubercles."

Considerable evidence in favour of the possibility of hæmoptysis being the cause, and not of necessity the effect, of phthisis, was brought forward by Niemeyer and those who accepted his views when he reopened the discussion on the subject.

I myself have notes of several cases of phthisis which have every appearance of having arisen from bronchial hæmorrhage. The usual points noted in such cases have been, that a man (generally) in apparent good health, and not infrequently after a drinking bout, brings up a large quantity of blood, so that from the amount one might suspect hæmatemesis, and continues to spit blood for several days. On auscultating the patient some crepitation is usually found, which, however, disappears in a few days, and the patient resumes his usual occupation, and may even feel better in health than before the attack. After a varying time, however, the patient shows symptoms of phthisis. Such cases are explained by the disbelievers in Morton's theory as being secondary to the primary deposit of tubercle. Let us put aside the evidence of Niemeyer and his supporters, which was sufficiently strong to convince a large number when brought forward, and let us consider the cases from the new standpoint of the knowledge of the almost constant appearance of the bacillus tuberculosis in phthisical lesions.

Firstly, it is acknowledged that, where there is bronchial hæmorrhage of a greater or less degree, blood may be drawn into the ultimate bronchi and the pulmonary alveoli; for even Dr. Hilton Fagge,[1] a strong opponent of Niemeyer, in his excellent work, although he states that he had never observed any appearances which would lead one to believe that blood extravasated into the air-passages is capable of being inhaled into the pulmonary tissue *so as to form solid nodules,* adds: "I have repeatedly met with cases in which inhalation of blood into the lung had obviously taken place."

Secondly, it has been shown that blood may undergo caseation; indeed, Pollock,[2] a great believer in the tubercular origin of phthisis, admits "it is probable that in certain instances the residual fibrinous deposit in the lung is capable of becoming the nidus of tubercle, and that when infiltrated into the pulmonary tissue, it readily enters into the destructive changes which

[1] Principles and Practice of Medicine. 1885. Edited by Dr. Pye Smith. Vol. i. p. 959.

[2] Loc. cit

accompany softening." Other authorities to the same effect it will be needless to cite.

Thirdly, it has been shown that the bacillus tuberculosis is chiefly found in connection with caseous material, and that from a cheesy focus in which its processes start it may spread more or less radially into the healthy tissues, and, in the case of the lungs, the true tubercles or grey granulations, which are induced by the bacilli, by degeneration and blending with the initial lesion there, cause it to grow.

Let us suppose, therefore, that in a case of hæmoptysis the blood is not all got rid of by expectoration, but that some of it remains behind in the alveoli and undergoes caseation. Into the caseous material the tubercle bacilli are introduced and thrive, and from this initial lesion true tubercle arises and spreads. I am now supposing that which I believe to be very possible, namely, that true tubercle arises, in the great majority of cases, as a secondary infection, either local or general, from caseous material into which the bacillus tuberculosis has been first of all introduced, and in which it has multiplied, and that in the case of the lungs, the most common nidus for its development is cheesy bronchio-pneumonia or catarrhal pneumonia. I do not, however, deny the possibility of what may be called direct inoculation of tubercle by the bacilli entering the system through some abraded mucous surface.

The question of time is, however, certainly important with reference to this supposed origin of phthisis. It has been shown that outside the body the bacillus takes a long time to grow compared with other micro-organisms, even under all favourable conditions for its development. I would suggest, therefore, that this holds good in the body also, and so in cases of hæmoptysis, time is not, as a rule, allowed first for the formation of caseous masses (although it is true that the bacillus will grow and multiply in unchanged blood) ; and, secondly, for the bacillus to get foothold before the blood has been expectorated, changed or unchanged. If this view of the pathology of phthisis ab hæmoptoë be correct, it is obvious that hæmoptysis should always be looked upon with suspicion, and, even if unaccompanied with physical signs, should be treated very carefully, but at the same time hopefully. For if it be admitted that one case in a hundred, or one case in a thousand, can be explained from our point of view, we can with greater hope treat many cases of hæmoptysis which might otherwise be taken to be post-tubercular. We are most of us inclined to admit indeed that "consumption is curable," yet few in practice can echo heartily Carswell's dictum, quoted by Dr. H. Weber in the Croonian Lectures above alluded to, namely,

that "pathological anatomy has perhaps never afforded more conclusive evidence in proof of the curability of any disease than it has in that of tubercular phthisis."

We will now turn to the third class of cases of hæmoptysis—the third, that is, if we consider those in which hæmoptysis occurred as a symptom of phthisis the first; and the above cases, which include cases of possible phthisis ab hæmoptoë, the second. These are cases in which, at the time of the blood-spitting, exhibit no signs, or even symptoms, of phthisis, and which do not, even after repeated attacks, give any manifest signs or symptoms of phthisis. Watson, after reviewing the subject of pulmonary hæmorrhage at the time of the controversy above alluded to with reference to Niemeyer's reintroduction of Morton's views, makes the definite statement that he adheres to the extremely unfavourable prognosis of Louis as regards hæmoptysis, and of Andral, who said that of those whom he had known at some period of their lives to spit blood, only one in five escaped tubercular phthisis. On the other hand, Pollock states that of 446 cases occurring in his hospital practice of non-tubercular disorders resembling consumption, a very large proportion had hæmoptysis, and in addition to these there were carefully noted 191 instances of spitting of blood without consumption, depending upon cardiac disease, bronchitis, &c., and he adds the following significant words: "The rule must therefore be laid down, that without the evidence of physical signs and the concurrence of other symptoms, the diagnosis of tubercle in the lung cannot be made from hæmoptysis alone, no matter what its character may be. I have witnessed the most profuse pulmonary hæmorrhage repeated again and again without any physical signs in the lung of either tubercle or congestion, without any of the history of consumption, and without cardiac disease."[1] Niemeyer also states that a larger number of persons who spit blood than is usually believed have not, and never do have, phthisis.

I have myself notes of about ten such cases as Dr. Pollock has mentioned in the last paragraph above.

Of these cases I will describe shortly two only:—

Mr. H., æt. 40, farmer, saw me in March 1885 for an attack of blood-spitting. He gave the following history:—That *eight* years before he brought up a large quantity of blood all of a sudden in a field on a hot day, and was laid up for some time after. In 1884, a year before he saw me, he again brought up a considerable amount of bright blood, having been in the interval well, except for an occasional

[1] Principles and Practice of Physic, vol. ii., ed. vi.

slight cough. On examination he was found to be healthy-looking, well nourished, and muscular. He breathed easily; fingers not clubbed; functions healthy. No family history of consumption. Attributes his attack to a chill. On a former occasion had been advised to go to Australia, and would have gone, but his wife would not go, and so he gave up the idea. When he spat blood before, the doctor told him that it came from the left side. On physical examination of the chest, at the right apex were a few crepitations on cough, with impairment of resonance, but the chest was otherwise natural. In a month's time the physical signs were scarcely to be detected at all; in fact, had been very possibly due to blood remaining unabsorbed in the alveoli. The last account I had of the patient was that he was quite well.

Mr. M., æt. 25, has been under my treatment four times for hæmoptysis since 1881. Each time the blood came up without warning, continued for two or three days, and accompanied by considerable depression. Strong, handsome, and muscular man, apparently in thoroughly good health in the intervals between his attacks (the last being in April 1886). He never has presented, up to the present, the physical signs of chest-disease.

This patient's brother has since consulted me for an attack of hæmoptysis.

Of the other eight cases of recurrent hæmoptysis, one had blood-spitting twelve or fourteen years ago, and one four or five years ago. Hilton Fagge mentions the case of an old lady, about seventy years old, who on two successive occasions brought up several ounces of blood, but who got quite well afterwards, and is now living, and who has at no time had any signs of mischief in the lung. He explains the case by stating the probability that she really had, and still has, a small old cavity in one apex.

Of the cases of hæmoptysis occurring in the apparently healthy, I can confirm, from my own observation, what Dr. Andrew lays stress on, that some cases are in some way connected with syphilis. Such cases one occasionally meets with in hospital out-patient work. One case, however, which occurred in private is vividly present to my mind. A young man, aged about twenty, contracted syphilis, and six weeks after the initial lesion, whilst he was more or less affected by the specific rash, commenced to spit blood in very large quantities. This blood-spitting continued for many days; no ordinarily used hæmostatic drugs appeared to have any effect in stopping it. The quantity lost altogether must have been enormous. At last, by the advice of Dr. Andrew, the patient was placed under full doses of mercury, and the blood-spitting ceased. This patient, however, in two or three years died in a condition not to be distinguished from true

tubercular phthisis. Whether his case was afterwards one of phthisis set up by the blood-spitting or not, one cannot say. At any rate, at the time of the hæmoptysis there were very few signs in the lungs.

Finally, as regards some of the cases of recurrent hæmoptysis, slight or severe, excluding the cases into which syphilis enters somewhat, I am inclined to adopt the suggestion of Dr. Herman Weber that the bronchial hæmorrhage may be simply a manifestation of a tendency to bleed from mucous membranes (or of a delicacy of mucous membranes?), just as epistaxis may be.

At the same time, believing in the possibility of phthisis being set up by the inhalation of the blood into the pulmonary alveoli, *if in any quantity*, one must, even in these cases, look upon hæmoptysis with suspicion, and consider that a person spitting blood, especially more than once, ought to be carefully treated, and placed under as favourable hygienic and other conditions as possible.

The following points, therefore, about the spitting of blood, whether in great or small quantity, I consider to be proved:[1]—

(1.) That in the majority of cases hæmoptysis is simply a symptom of the established lung-disease.

(2.) That the theory of phthisis ab hæmoptoë is not at all incompatible with the modern discovery of the bacillus of Koch in most of the lesions of phthisis, and that bronchial hæmorrhage may be considered, in some cases, to be the cause of phthisis.

(3.) That it is by no means uncommon for hæmoptysis (due to bronchial hæmorrhage) to occur again and again in persons who never become phthisical.

(4.) That some of the cases of recurrent hæmoptysis are connected with syphilis, and that others occur in connection with a tendency to hæmorrhage from mucous membranes, just as in the same way epistaxis sometimes does.

(5.) That hæmoptysis from bronchial hæmorrhage is under any circumstances to be looked upon as a serious symptom.

[1] They incorporate most of Niemeyer's propositions on pulmonary hæmorrhage.

A CASE

OF

PARALYSIS OF THE ABDUCTORS OF THE VOCAL CORDS,

WITH

LESIONS OF SEVERAL CRANIAL NERVES.

BY

ARCHIBALD E. GARROD, M.D.

I am indebted to Sir Dyce Duckworth for permission to publish the following case.

On the morning of December 16th, 1885, a man, aged 60, came to the Surgery complaining of difficulty of breathing. It was at once evident that his dyspnœa was very considerable, and the loud crowing sound which accompanied inspiration suggested paralysis of the crico-arytenoidei postici, especially as his voice, though somewhat stridulous, was fairly natural, and the chest showed no abnormal physical signs. After admission to John Ward he narrated how he had formerly been a sailor, but for the last two years had done no regular work, earning a precarious livelihood, and sleeping at night in common lodging-houses. Of late he had found considerable difficulty in obtaining a night's lodging on account of the reputation which he had acquired of disturbing all other lodgers by the noise which he made in his sleep. He volunteered the information that once being on the tramp, he had slept in the open in a field near Leicester, and on awaking found all the cows collected

around him and regarding him with considerable concern, which he attributed to this same noise.

A laryngoscopic examination showed that during inspiration the vocal cords were only separated to a very slight extent, the glottis having the form of an extremely acute-angled triangle.

Shortly after admission he had a paroxysm of rather urgent dyspnœa, and as it was thought advisable that tracheotomy should not be postponed, the operation was performed by Mr. Wells that afternoon. The relief from the operation was complete and immediate, although the patient was much concerned at the loss of his voice. He was in a very weak state, the pulse being very shabby; but his condition was probably due to a great extent to the want of proper nourishment for some time before his admission. For the remainder of the day the patient was fed with a tube through the nose every four hours.

The operation wound, which never gave any trouble, healed well.

After the urgent symptoms had been relieved, it became possible to study the general condition of the patient, with the following results:—

The sense of smell was found to be slightly impaired upon the right side as compared with the left.

The right pupil reacted very sluggishly both to light and to accommodation. There was complete ptosis of the right eyelid, and the conjunctiva was inflamed. The eyeball was absolutely fixed, the muscles supplied by the third nerve being powerless as well as the external rectus. The right pupil was slightly larger than the left. The left pupil was also partially paralysed.

The left external rectus was absolutely powerless, but the muscles supplied by the third nerve acted well. The vision was slightly double.

Sensation was impaired to a certain extent over the right eyebrow. There was no facial paralysis on either side, but hearing was slightly impaired on both sides.

The tongue was protruded slightly to the left.

The sensation on the front and ulnar side of both fore-arms was slightly impaired, as well as that of both little fingers, and the last two phalanges of the ring-fingers, the numbness being greater in the right hand.

The knee-jerks were completely abolished, and there was numbness of the toes of both feet.

As the patient had had syphilis seventeen years before, he was at once given iodide of potassium in twenty-grain doses three times a day. This quantity was increased to forty grains before he left the Hospital, and he also took perchloride of mercury.

Further examination revealed nothing abnormal in the lungs or heart, but the action of the latter was very feeble.

He gradually picked up strength after the operation, in consequence of good nourishment, but the paralytic symptoms showed little if any change.

The larynx was examined repeatedly during his stay in the Hospital, but the most careful watching showed no change worth speaking of in the condition of the vocal cords, which always exhibited abductor paralysis of the most extreme degree.

After the operation, when the necessity of using the glottis for the passage of air was removed, the opening was reduced to a mere elliptical chink.

He was able, after a time, to talk freely, by placing the tip of a finger over the opening of the tracheotomy tube.

On March 3rd, 1886, the note records that he was able to move his right eye slightly in the vertical axis. Throughout his stay in the Hospital he suffered from inability to pass his water, and from digestive troubles, and on March 1st he had an attack of dry pleurisy at the right base, which, however, but slightly retarded his general progress.

On April 12th he was transferred to an infirmary, with no appreciable change in the paralytic conditions. When last heard of, he was engaged in collecting rags in the streets, still wearing his tracheotomy tube.

The variety of the lesions in this case, including ophthalmoplegia interna and externa, coupled with the history of syphilis seventeen years before, seem to leave little room for doubt that the lesion which caused these phenomena was a gummatous growth extending over a considerable area of the lower surface of the brain, and involving the various cranial nerves near their origin from that organ. It is, however, interesting to note the powerlessness of antisyphilitic treatment to effect any perceptible amelioration of the patient's condition.

CLINICAL NOTES AND OBSERVATIONS.

BY

SAMUEL WEST, M.D.

Rheumatic Fever—Numerous Nodules—Pericarditis and Endocarditis.

Sarah C., æt. 39, was admitted into the Royal Free Hospital for rheumatic fever on November 30. She had been married sixteen years, and had had no children. She had been in good health till the present attack. A week ago the joints became swollen and painful, so that she was confined to bed; a few days later she found some painful lumps on her head.

The case was an ordinary one of rheumatic fever so far as the joints went. The heart was affected. At the time of admission there was a blowing apex systolic murmur, and possibly some pericarditis. Upon the head were ten or twelve nodules of various sizes, chiefly on the back part; none on the top or in front of the middle of the parietal bones. They were hard and well-defined, a little irregular at the margins, and slightly tender, not moveable, but fixed to the pericranium or bone. The skin was freely moveable over them.

December 3.—Two fresh nodules have appeared over the right external condyle of the humerus, one the size of a pea, the other twice that size. They are fixed at the base to the fascia or bone, but the skin is freely moveable. Another nodule has appeared just above the olecranon; another on the external side of the ulna, in its middle; another on the inner side of the first joint of the thumb; and a fresh one on the head.

On the 5th a fresh nodule developed on the right side of the right frontal bone, just at the edge of the hair.

On the 8th, more on the head, and those on the condyles were larger.

On the 10th pericardial friction was heard.

On the 11th, more on the head, and the others larger.

On the 12th, a new nodule on the left external condyle.

On the 17th, one on the frontal bone, just above the root of the nose; the rest, however, somewhat smaller. The nodules seemed to vary from day to day, getting smaller one day and increasing the next. They were throughout more painful at night.

On December 27 the pericardial friction was distinct still. The lumps had for the last few days all of them been steadily decreasing. As they became smaller they also became moveable on the parts below. From this time improvement continued, and on the 17th of January the patient left the Hospital convalescent. The pericardial friction had gone, but a systolic apex-murmur persisted.

Three weeks later she came to the out-patient room, and the lumps had entirely disappeared.

The case was one of prolonged rheumatism so far as the joints went, for even so late as fourteen days before her discharge she had a slight relapse in the right knee.

Two years later she came again under observation with a return of the same affection. A month before she was admitted she had rheumatic pains in the joints, which confined her to bed. She had not been free from pain since. One month ago nodules appeared on the head, knees, and elbows; they came suddenly and were very painful. Ten days ago the breathing became very short, and she had great pain in the left side.

On admission on January 4, 1886, she was suffering much from bronchitis and dyspnœa; the heart's action was weak and irregular, and pericarditis was suspected. Nodules were found in numbers on the back of the head, tender to touch, and firmly fixed. The largest is nearly the size of a hazel-nut, apparently formed by the fusion of smaller ones. There were also nodules on the knuckles of the right little finger, and of the left ring and little fingers, on the extreme outer side of both patellæ—here as large as a small almond,—and lastly, one as large as a pea over the outer side of each malleolus. All these lumps were of the same nature; they felt very hard and were tender, fixed to the tissues below, and the skin was freely moveable over them. The temperature was 99.2° on admission, but never rose above normal afterwards.

On January 6th headache was severe and general, and one new nodule had appeared above the left temple. There was distinct pericardial friction.

On the 11th a fresh nodule was found on the right fifth metacarpal bone. The others were getting smaller.

On the 13th friction was gone. A few small nodules appeared on the forehead.

On February 1st several nodules formed on the carpal bones and knuckles of the left hand.

From this time the nodules began to decrease and convalescence to establish itself. As long as the lumps were coming out the joint-pains continued and the rheumatism was constantly relapsing. The pains continued a little longer after the last lump had developed, and the pains and lump seemed to disappear together. The pericarditis subsided, and the patient left with the heart in much the same condition as on her previous discharge in 1884, but it was thought that the aortic valves were probably also affected as well as the mitral. So far as is known, there has been no return of rheumatism since discharge.

The interest of the first attack consisted in the extraordinary number of the nodules—there were at least thirty on the head alone—and in the chronic relapsing character of the rheumatism. The recurrence of an exactly similar attack two years later adds additional interest to the case. So far as it goes, this case bears out the statement that is made that those nodules occur in the graver forms of rheumatic fever, and are of bad prognosis. This patient had from the very first severe cardiac affection, both peri- and endo-carditis.

A similar case is recorded by Drs. Troisier and Brocq, quoted by Dr. Barlow in the Transactions of the Medical Congress, 1881. A man had two attacks of rheumatism, each with nodules, the largest the size of a hazel-nut. The nodules were fifteen weeks before disappearing.

Rheumatic Nodules—Nodule over the Left Internal Condyle of the Humerus.

Eliza P. The patient has had rheumatism often, but never, she says, fever. The first attack came on after confinement, and she was obliged to use crutches for two years. She then recovered. Since then she has had frequent attacks, but none of them severe.

The nodule lasted one month, and then disappeared, but the rheumatism persisted. There was no morbus cordis.

Rheumatic Fever in a Child of Seven Months.

William C., æt. 7 months. A first child, brought up with the breast; was perfectly well and healthy until August 13th. A slight rash was then noticed on the chest. This was followed by a swelling in the right wrist and ankle, and in the left big toe.

The swollen joints were painful and tender, and the limbs were kept quite still, and movement was resented. The child had not seemed ill in itself, for it had slept well, had been fairly lively, and had taken the breast well.

When seen at the Hospital on August 20th, the child was lively and seemed well; the tongue was clean, but the right wrist and ankle were swollen and hot; tender and clearly painful on movement, for the child would not use the right hand, but used the left. A few grains of salicylate of soda were given, and in a few days the child was well.

On January 24th the child was brought back with the same symptoms. This attack passed off in a few days under the action of the same remedy.

The father is 23 and the mother 21 years of age. The father has had rheumatism several times. The father's mother has had many attacks of rheumatic fever, and the mother's mother is also rheumatic.

Hysterical Dyspnœa.

Margaret C., æt. 20, was brought to the Hospital for dyspnœa. When seen she was puffing like a steam-engine. The respirations were panting in character, about 112 in the minute, but varying in number from time to time, and becoming more rapid while under observation. The movements of the chest were free and symmetrical; the respiratory murmur was loud, but there were no physical signs of affection of the chest. The cheeks were flushed and the lips red. The pulse small, 130.

The patient was emotional and inclined to cry, but seemed to have no power of control over the affection. She complained of pain over the chest, chiefly in the cardiac region.

She is the third in a family of fifteen, and has never been strong. One sister of the patient's died at 17 of phthisis. The eldest brother is said to have had similar attacks at her age, but after a year they passed off. The catamenia commenced at 13, but have never been quite regular. There is no connection between these attacks and the catamenia.

This condition has lasted now for some weeks, and seems to be getting worse, and she has been unable to do any work. The patient was much distressed by her illness, and was greatly relieved on being told that she would get quite well.

On November 4th, a week later, on being seen again, the respiration was of the same character, and equal in number to the pulse-beats, 120. A dose of asafœtida and æther was given in the out-patient room. This made her faint, and during the

attack the breathing became much slower, and on coming round the face flushed deeply and the rapid breathing returned.

On January 13th she was much better, after a course of iron and occasional doses of bromide of potassium. She had had much fewer attacks lately. She looked stouter and felt less nervous.

On February 17th she had had no attack for three weeks.

On April 17th she came complaining of profuse catamenia for some weeks. They returned about every eight days. This was controlled by a little ergot.

On May 5th she looked well, but had been troubled with palpitation, due, she thought, to her work. The thyroid was carefully examined, but no enlargement could be found.

Since then she has been frequently seen, and has had no severe attacks at all, but only now and then a slight return, which she says she can easily bear. She looks well and has gained flesh.

Spasms of the Thumb and Fore-arm Muscles, with Twitching of the Opponents.

Sarah B., æt. 39, has had since the age of 25 similar attacks to the present, coming on without cause; they come and go spontaneously, and have no relation to her work. She now works at chenille-making, which involves the use of the muscles affected; but the attacks used to come on when she was serving behind a counter, and had nothing special to do with her hands.

The thumb and first finger are tightly approximated, and the fingers all flexed at the metacarpal joint, but extended at the phalanges, *i.e.*, the adductors and the flexors of the thumb and the lumbricales are in spasm, and also the flexors of the fingers slightly. There is no wasting of any muscles. The opponents of the affected muscles, *i.e.*, the extensors in the arm, and the abductors of the thumb, with some on the back of the hand behind the metacarpals, are in a state of continuous fibrillary twitching.

The patient was seen several times, and the movements were the same. They appeared to be somewhat increased on observation. The present attack lasted one week, and then the spasm completely disappeared.

No cause for the attacks could be discovered.

She has been seen several times since, and once only she had a slight return of the spasm, but it lasted only a short time, and was not severe.

Two Cases of Agonising Cramp in the Muscles of the Neck.

Case I.—A gentleman of 65 years of age, was seized suddenly at four o'clock one morning with very severe pain in the left side of the neck. The spasms recurred every few minutes at first, and were so severe that the patient rolled about in agony, crying with the pain. Gradually they became a little less frequent, but they continued as severe for some hours. Between the spasms the pain was of an aching character, but endurable. I saw one or two of the attacks and the suffering they caused.

The attack consisted in a cramp of the trapezius, chiefly in its anterior portion. This became rigid and hard, and the skin over it very sensitive. The attack I witnessed was one of the later ones, and not nearly so severe as the earliest, but it was very painful. The tongue was covered with a creamy fur; the pulse soft and full; the urine pale, and the skin sweating. The seat of pain was painted every hour with liniment of aconite; 20 grains of salicylate of soda given every two hours, and a calomel purge administered.

The spasms gradually passed off, and by the next day the only complaint was of stiffness in the region of pain. The patient was much better. Some colchicum was given, and in two days the patient was well.

The patient had suffered from acid dyspepsia for years, and had one or two ill-developed attacks of gout.

The acidity had been absent for some little time before this attack, and returned immediately after it. For two or three weeks he had had some indefinite rheumatic pains in various parts of the body. I regarded the attack as connected with gout. In the next case, however, there was no evidence of this affection.

Case II.—A lady of about 55 was seized in exactly the same sudden way, as she was dressing one morning, with similar agonising pain in the neck. After a few spasms at that time the attack passed off, and she was able to go to church, where, however, it returned with such violence that she almost fainted. She continued in great agony from mid-day till I saw her at six o'clock.

The paroxysms had recurred every few minutes with very great severity, so that she had been forced to cry out, and when I saw her she was then crying with pain. The pain was felt at the side of the spines in the middle of the neck, and radiated up to the occiput. Some of the muscles here felt hard and rigid, and during the spasms were tender on pressure. I thought the distribution corresponded fairly well with the splenius muscle.

A third of a grain of morphia relieved her greatly, and the spasms became bearable, and from this time gradually subsided. The patient had been for a few weeks a little out of health, and had a little rheumatic pain flying about her. But she was neither rheumatic nor gouty. She had, however, suffered a great deal from severe neuralgia when out of health, but she had been quite free from it for two years.

During the attack the pulse was of small volume, and the artery contracted and hard, the skin cold, and she complained much of cold, though she did not shiver at all. As the attack subsided the pulse became soft and the wave of good volume.

Both appeared to be cases of rapidly recurring muscular cramp, and, except for the peculiar seat, would not have called for remark. In neither case could any cause be assigned for the attack. It was entirely unlike common stiff-neck, and there was no history of exposure to cold. After the paroxysms had subsided, nothing further was felt, except a little fatigue and stiffness in the affected muscles, which, however, quickly passed off. Between the cramps the head could be easily moved, and without pain, though movement was liable to start the paroxysm afresh.

Typhoid Fever with a Peculiar Mottled Rash—Relapse with Ordinary Rash—Recovery.

Mary J., æt. 21, married, with two children, came in with a history of seven days' illness.

The case was a clear one of typhoid fever and the characteristic rash appeared on the ninth day. The temperature was high, and the case, though ordinary, severe.

On the ninth day, *i.e.*, on the same day that the spots were seen on the abdomen, a dusky erythematous rash appeared on the back of the left arm and fore-arm. On the next day, November 30, there was a little branny desquamation on this part, which felt, the patient said, tender. Rose spots were now found over the whole body and extremities, sparsely scattered and associated with a general erythema; the face was dusky and somewhat mottled, and both spots and erythema were found on the face.

December 1.—Over the trunk the erythema was less distinct, but upon the extensor surfaces of the arms the erythema was dusky, and with a mottling which resembled that of typhus. Upon the face there was the same dusky mottling, though not quite so marked. Upon the legs there was no erythema, but the rose spots were capped by a few scales like the more extensive desquamation seen previously on the left arm.

By the 5th of December the rash had almost completely disappeared from the extremities, but there were still many spots upon the abdomen, and the face remained dusky and mottled.

On the 9th of December a fresh papular erythematous rash appeared upon the face and legs, but in two days this also quite vanished. The patient was now convalescent.

Three weeks later a very severe relapse occurred, for which no cause could be found. It ran an ordinary course; the rash was characteristic, and there was no erythema this time. At the end of three weeks convalescence commenced and progressed favourably.

The peculiarity of the case was the dusky general mottled erythema, which resembled closely the similar rash of typhus. The dusky colour, in part, may have depended upon the feeble action of the heart, for the first sound was very weak, and for the first few days after admission could hardly be heard.

Typhoid Fever—Convalescence—Severe Abdominal Pain like Perforation, probably due to Constipation.

Emma T. was in the Royal Free Hospital with typhoid fever. The case was a severe one, but recovery was complete in time, and the patient was discharged in fair health on May 8th. The next day she was brought back collapsed and suffering great pain. She went straight home on leaving the Hospital. She had nothing to eat which could disagree with her, and went early to bed. Soon after, about ten o'clock, she was seized suddenly with intense abdominal pain, which obliged her to scream out. It lasted all night and up to her admission.

On admission she appeared in very great pain, throwing herself about in agony. The face was dusky and pale, the pulse small, 120, and she vomited at times a yellow fluid. The abdomen was very tender and somewhat distended, and the legs were drawn up. The temperature was below normal. Some opium was given and some warm applications placed on the abdomen.

The next day the condition was much the same, except that the pain was kept under control by opium.

On the 12th there was but little change, and six leeches were applied to the abdomen with relief.

On the 13th the pain was less; and as the bowels had not been relieved since admission, an enema was given. The temperature had risen to 100.6°.

On the 14th the temperature was lower and the bowels moved,

and menstruation commenced for the first time since the illness. It lasted only one day.

On the 15th the temperature was normal. From the time that the bowels were moved the pain subsided, and the attack may no doubt be referred to constipation.

A similar case I remember in a boy, but there was not in that case the same collapse, and the diagnosis was easier.

In this case, except that the patient moved more than is usually the case in perforation, the collapse and the severity of the attack seemed to point to rupture of the bowel as the cause.

Typhoid Fever in Fourth Month of Pregnancy, with Relapse—Threatened Abortion—Recovery—Birth of Child at the Seventh Month.

Catherine G., æt. 20, came in with typhoid fever. She was four months pregnant. In the third week she had some abdominal pains which seemed to threaten abortion, but they subsided, and a few days later some albumen appeared in the urine.

In the sixth week, during convalescence, abortion was again threatened, but passed off.

Ten days later there was a relapse of typhoid spots developed, and they were remarkable for their bright pink colour; they looked like recent petechiæ, but disappeared on pressure.

The patient recovered completely and left well. Shortly after leaving the baby was born at the seventh month. The child was living when the patient was last heard of, some weeks after the confinement.

Typhoid Fever—Very Low Temperature during Convalescence.

William S. was under treatment for a very mild attack of typhoid fever. There was no diarrhœa, and the temperature range was from 100° to 102° for three weeks. The temperature then fell gradually, and on the tenth day of convalescence ranged from 97° to 98.2°. For a whole month from this time it remained extraordinarily low, rarely touching 98°, and on many days 97° was the maximum reached. The minimum recorded was 95.4° in the mouth on one occasion; on three other days during this month it was 95.8°, and on five others 96°. Only twice did the maximum reach 98°.

Days of Convalescence.		Degree of Temperature.							
		95°.	96°.	97°.	98°.	99°.	100°.	101°.	102°.
1st	M.	...	...	...	...	...	...	101.4	...
	E.	...	...	...	...	...	...	...	102.2
2d	M.	...	...	...	...	...	...	101	...
	E.	...	...	...	...	99.4	...	...	...
3d	M.	...	...	...	98	...	...	...	...
	E.	...	...	...	98.4	...	...	...	..
4th	M.	...	...	...	...	...	100.2	...	...
	E.	...	...	...	...	...	100.8	...	...
5th	M.	...	...	...	...	...	100	...	...
	E.	...	...	...	98.6	...	...	...	...
6th	M.	...	...	...	98	...	...	...	...
	E.	...	...	...	98.2	...	...	...	...
7th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	...	...	...	...	...	...
8th	M.	...	...	...	...	99.4	...	...	...
	E.	...	...	...	...	99	...	...	...
9th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	...	97.6	...	...	...	...
10th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	...	98.4	...	...	...	...
11th	M.	...	...	...	98.2	...	...	...	...
	E.	...	...	97	...	...	...	...	...
12th	M.	...	...	97	...	...	...	...	...
	E.	...	...	97.4	...	...	...	...	...
13th	M.	...	...	...	98	...	...	...	...
	E.	...	...	...	98.4	...	...	...	...
14th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	97.4	...	...	...	...	...
15th	M.	...	96	...	...	...	...	...	...
	E.	...	96.8	...	...	...	...	...	...
16th	M.	...	...	97	...	...	...	...	...
	E.	...	...	97.4	...	...	...	...	...
17th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	97.6	...	...	...	...	...
18th	M.	95.4	...	...	...	..	...	...	...
	E.	...	96.4	...	...	...	...	...	...
19th	M.	...	...	97.2	...	...	...	...	...
	E.	..	...	...	98	...	...	...	...
20th	M.	...	...	97.2	...	...	...	...	...
	E.	...	...	97.4	...	...	...	...	...
21st	M.	95.6	...	...	...	...	...	...	...
	E.	...	96	...	...	...	...	..	...
22d	M.	...	...	97	...	..	...	...	...
	E.	...	...	97.2	...	...	...	...	...
23d	M.	...	...	97.2	...	...	...	...	...
	E.	...	...	...	98	...	...	...	...
24th	M.	...	...	97.2	...	...	...	...	...
	E.	...	...	97	...	...	...	...	...

Days of Convalescence.		Degree of Temperature.							
		95°.	96°.	97°.	98°.	99°.	100°.	101°.	102°.
25th	M.	...	96.4	...	...	...	...	...	...
	E.	...	96	...	...	...	...	...	...
26th	M.	...	96.8	...	...	...	...	...	...
	E.	...	96.2	...	...	...	...	...	...
27th	M.	...	96.6	...	...	...	...	...	...
	E.	...	96	...	...	...	...	...	...
28th	M.	95.6	...	...	...	...	...	...	...
	E.	...	96.8	...	..	...	...	...	...
29th	M.	...	...	97.6	...	...	...	...	...
	E.	...	...	97	...	...	...	...	...
30th	M.	...	96.2	...	...	...	...	...	...
	E.	...	96	...	...	...	...	...	...
31st	M.	...	96.2	...	...	...	...	...	...
	E.	...	96.2	...	...	...	...	...	...
32d	M.	...	...	97	...	...	...	...	...
	E.	...	...	97.4	...	...	...	...	...
33d	M.	...	96.6	...	...	...	...	...	...
	E.	...	...	97.6	...	...	...	...	...
34th	M.	...	...	97	...	...	...	...	...
	E.	...	...	97.4	...	...	...	...	...
35th	M.	...	...	97.2	...	...	...	...	...
	E.	...	...	97.6	...	...	...	...	...
36th	M.	...	...	...	98	...	...	...	...
	E.	...	96	...	...	...	...	...	...
37th	M.	...	96.4	...	...	...	...	...	...
	E.	...	96.8	...	...	...	...	...	...
38th	M.	...	...	97	...	...	...	...	...
	E.	...	96.6	...	...	...	...	...	...
39th	M.	...	96.6	...	...	...	...	...	...
	E.	...	96	...	...	...	...	...	...
40th	M.	95.4	...	...	...	...	...	...	...
	E.	...	...	97	...	...	...	...	...
41st	M.	...	96.8	...	...	...	...	...	...
	E.	...	96.4	...	...	...	...	...	...
42d	M.	...	...	97	...	...	...	...	...
	E.	...	96.4	...	...	...	...	...	...
43d	M.	...	...	97.2	...	...	...	...	...
	E.	...	96.6	...	...	...	...	...	...
44th	M.	...	...	97	...	...	...	...	...
	E.	...	...	97.2	...	...	...	...	...
45th	M.	...	...	97.2	...	...	...	...	...
	E.	...	...	...	98	...	...	...	...
46th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	...	98.2	...	...	...	...
47th	M.	...	...	...	98.4	...	...	...	...
	E.	...	...	...	98.8	...	...	...	...
48th	M.	...	...	...	98.2	...	...	...	...
	E.	...	..	...	98.2	...	...	...	...

Chorea Cured by Typhoid Fever.

A child of 10 years of age was admitted for chorea. It was only a moderately severe case. After she had been in the Hospital for about three weeks, and while the chorea was still considerable, she was attacked with typhoid fever, which she had acquired in the Hospital in some way. As soon as the fever had developed the chorea stopped at once and did not return. The fever was a well-marked but mild attack, and lasted three weeks.

The parents were surprised at the sudden cure effected, and were most grateful. They regarded the fever and consequent illness as the natural result of the rapid cure.

Mild Typhoid Fever in a Child, with Retraction of Head and Squint during the Attack—Recovery.

Thomas W., æt. 10, was admitted in a state of high fever, having been ill three days. The spleen was found much enlarged and the abdomen tumid. There was much delirium, and on the eighth day spots were found on the abdomen. The case appeared to be one of typhoid fever, but three days later the child was found lying with the head thrown back with a slight squint. This appeared to throw doubt upon the original diagnosis, but in a few days these symptoms disappeared and the child made a good recovery.

Case of Teething, for some time resembling Meningitis.

Emily K., æt. 10 months, had been well till three weeks ago, when it had a shivering fit, followed by vomiting and diarrhœa. It had been very fretful and feverish since, especially at night.

The temperature rose on the evening of admission to 103°, and reached 102° every night for a week, falling during the day to between 100° and 101°. The tongue and mouth were covered with sordes, the stools loose, and there was frequent vomiting. The child was very ill, and, as the gums were swollen a little, the case was at first regarded as one of teething. A few days later a squint was noticed, with some nystagmus, and the vomiting continued. There was no optic neuritis; the strabismus varied from time to time, being sometimes considerable; there were also at times jerky movements of the hands and arms and tremors of the fingers. The fontanelle was not tense nor prominent.

The next day the head was thrown back and the neck was held stiff. For the next four days the symptoms persisted, and

then, after a very bad night, in which the child lay moaning and vomiting all the time, it passed into a semi-comatose state and seemed about to die.

The case up to this point appeared to be one of meningitis. The chief facts against that diagnosis were the prominence of the abdomen and the depression of the fontanelles.

A day later the breathing became irregular, and somewhat like Cheyne-Stokes breathing. At this time improvement began, and a tooth was cut, and a day or two later another. After this the symptoms all subsided rapidly, and the child got quite well.

For a fortnight after admission the diagnosis remained in suspense. During the first week the temperature was as described, and in the second fell to normal during the time that the child seemed to be passing into a state of coma.

The gums were repeatedly examined to see if there was any source of irritation evident, but it was thought that no sufficient cause for the symptoms was found.

The case remained for a fortnight longer under observation, and left in good health. The child has remained well since.

Case of Erythema, (?) Hæmorrhagicum.

Thomas A., æt. 26, came to the Hospital with a rash upon his body. He stated that yesterday, December 28, this rash appeared as it is now upon the legs and thighs between the hours of 12 and 7 P.M. He suddenly felt a burning all over, but he did not shiver or feel ill, and he had no pain. He felt only as he does when there is a thunderstorm—hot all over. There was no itching until the night, when it became intense.

The rash was confined to the lower extremities, being chiefly on the legs and the lower parts of the thighs, with a few spots on the buttocks; none on the soles and none on other parts of the body. The rash was purpuric in character; there were some small spots; for the most part they were confluent and irregular. The patches were slightly raised above the surface. The largest were on the lower parts of both legs and under the right knee. The colour in the smaller spots bright, in the larger duller. Some were covered with black scales in the centre (dried blood), and if the epidermis was rubbed off, blood-stained serum exuded.

The rash dates from a first attack at three months' old; since then he has had frequent attacks, usually at spring and autumn. They come on without cause or warning. The rash comes usually on the legs, but it has come on the arms, and then it

reached the back of the shoulders; but with that exception it has never occurred on the trunk.

At 14 years of age he was in bed with it for two months; at 19, for two weeks; and at 24, also for two weeks. About that time it was so severe that he was in bed for three weeks, and then it became pustular in places and extremely painful. The legs only were affected. This he attributed to arseniate of potash, which he was taking at the time.

There is no other evidence of purpura, scurvy, or hæmophilia in the patient, and no history of these affections in his family. The patient says that he feels hot in winter and cold in summer, so that he wears a coat in summer and not in winter.

On January 1st the right leg was much swollen at night. It measured 18 inches round the calf and 15 round the ankle.

On January 2 the right leg was less swollen, but the left was slightly swollen. All the swelling disappeared about two hours after lying down. The face was not puffy. The urine was 1015, and contained no albumen.

On January 3 the rash had greatly faded and the œdema was much less.

On the 7th the rash had almost gone and the swelling quite. The itching, which had been troublesome throughout, had been very severe at night for the last few days.

He was treated with some saline, but without arsenic, though he offered to take it if I wished, to prove that it would bring on an attack.

The patient has not been seen again for two years, and I think that he has therefore had probably no fresh attack.

Cases of Acute Affection of the Skin in the course of Kidney-Disease.

I have seen three cases recently in which an acute general affection of the skin developed in patients who were in the Hospital for chronic disease of the kidney. In two the affection was of the nature of dermatitis universalis exfoliativa, or perhaps it might have been called pityriasis rubra, and in the third it was more of the nature of urticaria. The cases were not under my own care, and I cannot obtain the full notes.

The two first patients were women between 40 and 50, and the subjects of chronic kidney-disease—in one, large white kidney, and in the other granular kidney; one had some general œdema, the other none. In both, the skin affection was the same, and peeling was extensive; but before it was complete the patients died. The eruption seemed to be associated with great exhaus-

tion, but with no other definite change. In the third case, also a woman of about 50 suffering from granular kidney, the eruption was a tuberculated rash, covering the whole body, trunk, extremities, and face. Many of the tubercles were small, the majority about ¼ inch across, but larger patches were formed by confluence. The tubercles were rather too definite and round for urticaria, nor did they itch. The base was of the same colour as the skin, and the centre not white, as in urticaria wheals.

When the rash appeared the patient was in a condition of semi-uræmia, which further developed; and after only a few days the patient died while the rash was still upon her.

The association of acute rashes, such as the two first patients had, with kidney-disease is mentioned by writers, and in some of the cases described was fatal.

The fourth and most severe case occurred also in a woman of about 54, who was in the Hospital for an operation on the breast, which had been successfully performed. During convalescence she suddenly became covered with a brilliant red rash, such as is described by the name of pityriasis rubra. She became ill and the temperature rose to 103° for a day, but soon after she became quite herself, and the temperature fell to normal. The whole skin peeled off in flakes, including the roots of the fingers and toes. There was no albumen in the urine at the time of eruption or at any other, and the patient completely recovered.

Case of Acute Pemphigus.

Margaret T., æt. 23, barmaid, married, was bitten on the right thumb by a dog a month ago. The wound was small and quickly got well. A week later she noticed some small spots, like blisters, on the back of the right hand. Similar spots quickly appeared on the other hand, on both arms, legs, and trunk, and became pustular. There was no itching, but a feeling of burning and tingling while the spots were becoming pustular. There were never any on the face, and but few on the back. The appetite has been bad since the rash, but she has not been otherwise ill. She can attribute the eruption to no cause, and has had nothing like it before. The patient is well-nourished and healthy-looking. The backs of the hands are covered with pustular bullæ, especially over the knuckles and between the fingers. On bursting, they leave a raw, red surface. The spots commence as small clear vesicles of the size of a pin's head, which gradually enlarge up to the size of a sixpenny-piece. They do not involve the true skin. The spots are numerous on the wrists, especially on the

flexor surface, and on the fore-arm, but they become fewer towards the shoulder. There are a few on the anterior folds of each axilla, and one or two on each nipple. On the abdomen they are more numerous, and also fairly plentiful on the extensor surfaces of the thighs; but there are none round the ankle, on the groin, buttocks, or back.

Temperature, 98.8° on admission, and 100° the next day. Tongue a little coated and dry. Bowels regular; urine normal.

Liq. arsenicalis, ℥ v., Hst. cal. c̄ soda, ad ʒi. ter die, was administered, and sulphur ppt. gr. xx., creosote, ℥ vi., adip. prep. ad ʒi., applied as an ointment to the spots. The patient was also bathed daily.

At the end of a week nearly all the spots were gone; but the next day and the day after some fresh spots appeared on the left ring-finger and round the left ankle, These, however, also quickly healed, and in a fortnight the patient was discharged well.

SURGICAL CASES.

BY

G. B. FERGUSON, M.D.

The following cases, which have been more or less recently under treatment in the Cheltenham Hospitals, possess, I hope, sufficient interest to justify their publication.

Case I.—*Ovariotomy—Recovery.*

R. H., æt. 51, a patient of Mr. Searancke of Micheldean, was admitted on September 17, 1885. She had five months previously noticed a swelling at the lower part of the abdomen. This was much distended (39 inches), being most prominent above and to the left of the umbilicus. There was dulness on percussion almost to the ensiform cartilage, and the flanks were also dull. A marked percussion wave all over the tumour. Superficial veins much enlarged. Umbilicus flattened. Catamenia had stopped suddenly four years previously,

Notwithstanding the rapid growth of the tumour, its nodulation and the cachectic aspect of the patient (all suggesting malignancy), it was determined, in deference to her very urgent wish, to attempt its removal.

After a few days of preparation, during which lithiæ citrat, gr. vi., with potassæ carbonat, gr. x., were given thrice daily, and potassii bromidi, gr. xv., with syrupi chloral hydrat, f℥i., at night (for she was sleeping badly), the operation was performed in the usual manner on September 24. There was but little ascitic fluid. The adhesions were mainly parietal, and were separated without much difficulty. About one-fourth of the growth (which was of the left ovary) was solid; the rest was cystic. The solid portion weighed about 12 lbs. The pedicle was readily secured with medium-sized Chinese twist, after the manner advised by Mr. Doran in Keetley's "Index of Surgery," a plan which the writer has found most simple and effective. It

secures the separate ligation of each half of the pedicle and the double ligation of the whole thickness, and is more readily applied—at any rate by the writer—than the Staffordshire knot.

The tumour, including the left Fallopian tube, was then removed, and afterwards the right ovary (which was several times its natural size), and its appendages likewise. This accomplished, our disappointment was great to find the omentum and mesentery studded with sarcomatous nodules (many one to two inches in length); likewise the pelvic peritoneum, and even the surface of the liver,—a condition militating adversely against the probability of even a temporary recovery. None the less were the latter stages of the operation completed with all possible care. The bleeding was thoroughly arrested, the peritoneal surfaces were cleansed and dried, and the sides of the incision were brought together with silk sutures, which were passed through the whole thickness of the abdominal wall. These and the pedicle and other ligatures (all of silk) had been previously boiled in 1 to 20 carbolic lotion. The spray and carbolic dressings and lotions were used, and the sponges, which had been successively treated with sulphurous and carbolic acids, were immaculate.

Well, very differently from several other malignant cases (not treated antiseptically) in which I have seen the abdomen opened, the progress of this patient was excellent. The temperature on the evening after the operation was 99.5°, and thereafter it was normal, save on the ninth day, when the trifling rise to 99° was noted.

On the night after the operation she slept for 10½ hours. She was given nothing but ice, and did not vomit either then or subsequently. On September 25 she took a little ice every hour; likewise, in all, 2½ oz. of milk, and slept that day and night during nine hours. On September 26 she was very comfortable; slept for eight hours; took 6 oz. of chicken-broth and nearly 12 oz. of milk. Thereafter there is little to remark, save that she improved continuously up to the time of her departure on October 29, 1885.

The further details of her management were carried out mainly as directed in Sir Spencer Wells's work. The dressings were not changed before the eighth day, and the sutures (not causing irritation) were left in for a fortnight. In fact, the malignant complication did not in the slightest degree interfere with a most satisfactory recovery. Did not the Listerian details contribute towards this result? I hope and believe they did, more especially when I notice (British Medical Journal, October 31, 1885) that in fifty cases operated on by Dr. Skene Keith

without the employment of these details, still with the enviable success of two deaths only, one of these was in just such a case as the one I have been narrating.

My patient left for her home on October 29 (within five weeks from the operation) in good health and spirits, though I must unfortunately add (as was to be expected) that after a few months her health deteriorated seriously. The nodules grew considerably (notwithstanding much arsenic that she took), and she became ascitic, and died at last somewhat suddenly. The chief lessons of the case I hold to be the following:—That a malignant complication does not necessarily interfere at all with immediate recovery. Moreover, that much increased comfort followed the operation, and that life was even somewhat lengthened.

Case II.—*Ovariotomy—Recovery.*

E. S., æt. 18, also a patient of Mr. Searancke, was admitted on May 5, 1886. A gradually increasing swelling had been noticed during eighteen months, and she had suffered from occasional abdominal pain. No pressure signs. Catamenia regular. Measurement 37 inches, and swelling more on left than right side, and reaching to the ensiform cartilage. Marked percussion wave. Right flank resonant; left dull. Heart and stomach displaced upwards. Urine contained a trace of albumen: sp. gr. 1015. Citrates of potash and lithia āā gr. x. were given during a few days of preparation, and the removal of a left-sided cystic ovary was performed at noon on May 8th. The right ovary was healthy and was left intact. The tumour, which weighed about 3 lbs., was mainly monolocular, and contained 29 pints of thin fluid. Adhesions were few and separated readily on steady traction. The operation was conducted and finished as in the previous case. Pulse in the evening was 82, temperature 101°. She was sick about 2 A.M. and at 7 A.M. next morning, though she was given ice only during the night, during which it is noted that she was free from pain, though she slept for about one hour only. On May 9th the temperature varied between the normal and 99.5°; after that date it was continuously normal or subnormal. On May 9th the diet consisted of 8 oz. of milk with 8 oz. of soda-water; no sickness; 8½ hours' sleep during the day and night; 42 oz. of urine removed by catheter, passed five times. On May 10th she slept over ten hours and took 23 oz. of milk and soda-water. From the last date she convalesced steadily, suffering practically no pain whatever, and being nourished mainly by milk and soda-water, to which on the seventh day were added Mellin's food

or arrow-root. On the ninth day she had custard-pudding; on the eleventh, fish. First change of dressings after one week; sutures retained a fortnight. Left for her home on April 5th (one month after the operation), in excellent health and spirits, and with the wound firmly healed.

Case III.—*Ovariotomy—Death.*

M. L., æt. 52, a resident in Cheltenham, was admitted on July 14, 1886. Married; has two sons, adults. Health began to fail and abdomen to enlarge about four years ago. Circumference 56 inches. Was seen by Dr. Ferguson two years ago (when she was only half as large), and an operation was advised. This she declined, as not being at that time seriously inconvenienced. Has suffered great pain recently, and her legs are much swelled. Suffers much from palpitation and dyspnœa on movement. An attempt at tapping was made one year previously, but one pint only of thick fluid was removed. Has a cough with expectoration. Was in the Hospital a month previously for operation, but was sent out again to ensure, if possible, the cure of her cough, which at that time was much worse. She is now suffering so severely from distension and weight that she implores (whatever the result) the making of an effort to remove her immense tumour. Says that she feels she cannot live many days longer as she is.

The operation was accordingly undertaken (though with much reluctance and misgiving) on July 15th. It proved of considerable difficulty, the tumour consisting of very numerous small cysts, which could only be evacuated by breaking from one into another. The parietal adhesions were universal, and required much perseverance to overcome. The hæmorrhage from the enlarged veins at the back of the abdomen was very considerable, and I doubt if it would ever have been arrested without the aid of a powerful lantern, in the beam from which the bleeding points were seen and secured. The tumour was of the left ovary, and notwithstanding its great size its pedicle was small and readily ligatured. The right ovary was healthy and was left untouched. The toilette of the peritoneum was sedulously performed; but there being still considerable oozing (though from no discoverable vessels), a large glass drainage tube was secured at the lower angle of the wound, which was then sutured with silk. The wound was about six inches in length. An untightened suture was left traversing the space occupied by the tube, the mouth of which was tied tightly into the perforated centre of a piece of india-rubber cloth. A car-

bolised sponge was now placed over the mouth of the tube, and the india-rubber cloth was tied around the sponge so as to completely cover it in. The operation, which was strictly Listerian, and during which the spray was used, occupied about two hours. I hope I may be allowed to mention how efficiently I was aided in all the stages of the operation by Dr. J. W. Bramwell. The collapse of the patient towards the close of the operation was extreme. She was pallid, pulseless, and scarcely breathing, but revived at last, her head being kept continuously low and her feet elevated. In fact, the latter stages of the operation were done whilst she was in that position. The solid part of the tumour weighed 6½ lbs.; the fluid part, which was almost glutinous, measured eight gallons. The total weight of the mass was 100 lbs.

After a few hours she recovered consciousness, spoke hopefully, and complained only of pain in the back. The evening temperature was 98°, a temperature practically undeparted from during the next three days. In fact, there was little or no fever to the end, the highest temperatures having been 99.2° about noon on the fifth day (it was normal in the morning and evening), and 99.6° on the eighth day (98.8° in the morning and subnormal at night)—figures conclusive as to the absence of septic or inflammatory processes. The pulse continued about 100, and never at any time reached 120.

The first night passed well, and she even slept for three hours. No sickness. Thirty-six ounces of urine were removed by the catheter, passed five times during the afternoon and night. During this time she was given five nutritive enemata, each containing 1 oz. of beef-tea, 1 drachm of Mellin's food, 2 drachms of brandy, 15 minims of liquor pancreaticus, and 3 grains of bicarbonate of soda. One ounce only of blood-stained fluid passed through the drainage tube during the night and the following morning.

During the second day and night (July 16th) she took 1 oz. of milk, 4 drachms of Brand's essence, and 8 drachms of brandy (diluted). She also received seven nutritive enemata. Flatulence complained of, and her cough, which had been almost in abeyance, was again beginning to annoy her. She slept for more than six hours. Thirty-seven ounces of urine removed. Half an ounce of fluid, still much blood-stained, passed through the drainage tube.

Third day and night (July 17th).—Patient comfortable, but for flatulency; but looking pale and exhausted. Given by the mouth 1½ oz. of milk, 16 drachms of Brand's essence, and 25 drachms of brandy (the last every hour and more), also eight nutri-

tive enemata. Urine, 61 oz. Four ounces of fluid passed through the drainage tube. Ordered for the flatulency, liq. morphiæ hydrochlor. ♏ x., and liq. atropiæ, ♏i., 4tis horis, dum opus sit.

Fourth day and night (July 18th).—Flatulency better, but cough worse. Morphia and atropine mixture stopped. Ordered Ems water ad libitum, and larynx to be painted internally with resorcin, gr. x. ad aquæ f℥i. Given by mouth, milk 1 oz., Brand's essence 19 drachms, brandy 23 drachms. Eight nutritive enemata given. Slept 8½ hours. Urine 56 oz. Eleven ounces of fluid (still slightly ensanguined) passed and drawn through tube. Vomited for first time at 1.30 A.M.

Fifth day and night (July 19th).—Not sick again. Cough better. Looking stronger and feeling better. By the mouth, milk 14 oz., Brand's essence 22 drachms, brandy 23 drachms, Eight nutritive enemata. Slept over six hours. Urine 60 oz. (catheter used six times). Nine ounces of nearly clear fluid from the wound.

Sixth day and night (July 20th).—No more sickness. No pain, but cough worse. By mouth, milk 24 oz., Brand's essence 20 drachms, brandy 23 drachms. Eight nutritive enemata. Slept more than eleven hours. Urine 60 oz. (catheter used six times). Nine ounces of nearly clear fluid from the wound.

Seventh day and night (July 21st).—Still coughing much, but looking and feeling better. Food as on previous day. Over nine hours' sleep. Urine 68 oz. Five ounces of fluid from wound.

Eighth day and night (July 22d).—Fresh dressings applied. Wound perfectly united and no surrounding inflammation. Patient much exhausted. Cough very troublesome and with much expectoration. Emplastrum cantharidis two inches square applied to lower part of neck and upper part of sternum. Siegle's steam-spray with vini ipecacuanhæ ♏ x. (diluted with two parts of water) employed at 7 P.M. and 11 P.M. Much relief at first. By mouth, 49 oz. of milk, 16 drachms of Brand's essence, and 26 drachms of brandy. Seven nutritive enemata. Three and a half hours of sleep. Sixty-five ounces of urine.

On the ninth day (July 23d) all the same efforts were maintained to sustain the patient and a mixture of ammon. carbonat, gr. ii., tr. digitalis, ♏ ii., liq. strychniæ, ♏ ii., tr. aurantii, ♏ x., infusi senegæ, f℥i., aquam ad f℥ss. was given every hour. No pain was complained of, but her look was one of great exhaustion, and her cough became more and more incessant. No wonder, therefore, that, having become very faint at 6 P.M., she died at 7.45 P.M.

I have been induced to give particulars with some detail,

believing this case to have been among the largest on which ovariotomy has been done. The patient was a most brave and uncomplaining woman, and quite expected, until near the end, that she would recover. I verily believe she would have recovered but for her cough. Was that increased by the spray during the operation? I cannot think it, for the operation was done on one of the hottest days of the year, when the question was how could we keep the patients cool.

No greater efforts, I believe, could have been made in the patient's interest than those superintended by the House-Surgeon (Mr. Jolliffe) and our Sister Florence (Mrs. Fuller).

I have wondered whether much of this patient's strength may not have been lost in the exudation through the drainage tube; and I should hereafter be disposed to relinquish its use sooner, even though, as in this case, the fluid still continued blood-stained.

Indeed, this case would dispose me to dispense with the drainage tube altogether, save in cases of the most indisputable necessity. The three preceding cases comprise all the ovariotomies at all recently done in the Cheltenham Hospital.

Case IV.—*Aneurysm of the Innominate and Aorta—Ligature of the Common Carotid—Temporary Recovery.*

John B., æt. 43, was admitted on April 20, 1884. Patient has been a bricklayer's labourer during the last ten years, and was previously, during a similar period, a soldier.

Four months ago he noticed the right side of his neck to be stiff, and he likewise perceived an unusual pulsation there. Swallowing has recently become painful and a tickling cough has arisen, but there is no dyspnœa. The heart palpitates at times, and he is then faint and giddy.

A distinct, powerfully pulsating swelling, of the size of a walnut, is evident at the roots of the right carotid and subclavian arteries, both of which vessels are conveying less blood than their left-sided counterparts. The swelling bulges at the posterior edge of the sterno-mastoid muscle. No abnormal dulness is detectable over the sternum or beneath the clavicle. The patient feels pain extending down the right arm on its outer aspect. A loud, rough, double murmur was audible over the aortic valves and over the entire precordial area. The heart's apex was beating in the fifth space, just external to the nipple. Pulse soft, of "water-hammer" quality, and delayed. Pupils equal. His chief annoyance is caused by the constant whizzing pulsation which he feels on the right side of his head.

The aneurysmal pulsation being practically undiminished after a fortnight of recumbency, Tufnell's diet and potassii iodidi gr. x. ter in die, with chloral hydrat gr. x. and potassii bromidii ℈i. at night; the diagnosis being innominate aneurysm, it was decided to tie the right common carotid and subclavian arteries, commencing with the former vessel. The operation on the carotid was done on May 10, 1884, at the usual site, and presented no difficulty whatever. Directly after its performance the pulsation was very much feebler in the aneurysmal sac, and it became impossible to feel any pulsation of the subclavian. That being the case, and remembering Mr. Holmes's opinion that the majority of the good following the double ligation results from the tying of the carotid, it was decided at any rate to postpone the operation on the subclavian.

The spray and carbolic lotions and dressings were used, and the ligature (which was tightly tied), was of chromic catgut of medium thickness, for which I am personally indebted to the great kindness of Sir Joseph Lister, as also on a previous occasion, when I ligatured the common carotid for cirsoid aneurysm. (See *Lancet*, April 4, 1885).

On the next day (May 11th) the patient was fairly comfortable, and especially happy at the cessation of the beating in his head. Temp. 99.2°; pulse, 100. A feeble pulsation was perceptible in the right temporal artery.

May 12th.—Patient very comfortable. Says he now feels very little pulsation in the neck.

May 13th.—No pain, though the night was restless. Pulse 84. Complains of headache. Potass. bromid. ℈i. ter in die.

May 14th.—Pulse 78. Very quiet during the day, though still restless at night.

May 15th.—Very quiet, perspiring much. No pulsation of right temporal artery, and right side of head much the colder. Head feeling better. On this (the fifth) day after the operation, the dressings (which had become displaced) were removed under the spray, and fresh ones were applied. The wound was found to be firmly healed and looked pale and healthy. The drainage tube, which had been left well projecting at the lower corner of the wound, could not be found. The aneurysm was still pulsating, but felt firmer and harder.

May 16th.—Patient comfortable and headache gone. Slight pulsation again perceptible over the right temple.

Much the same on the next two days. Sutures removed on May 19th (nine days after the operation). No change after the last date before June 6th (twenty-seven days after the operation), when the wound reopened slightly, and the missing tube was felt within it

and was removed. The small opening healed at once, and the incident, though somewhat discomposing, is worthy of mention, as showing how trifling is the irritation caused by an aseptic gutta-percha tube. The patient was kept in the Hospital for eleven weeks after the operation, and was afterwards sent to the Convalescent Institution at Weston. The note prior to his departure states that the tumour had wholly retracted behind the sterno-mastoid, and that its walls were hard and thick. Pulsation was still perceptible, but this was transmitted, not expansile. In fact, there was no doubt that the aneurysmal cavity was occupied by a firm clot, and all who saw him felt very hopefully about him. He still further improved at Weston, and even attempted after returning home (contrary to recommendation) to do a little work. In fact, he enjoyed tolerable health for about a year, and used to come backwards and forwards to the Hospital as an out-patient. After that period, however, he began rapidly to fail in health and strength, and the nocturnal dyspnœa (which was occasional even before he left the Hospital) became gradually worse. The dysphagia, too (long in abeyance), returned, and it was but too evident (though no pulsation or any percussion dulness revealed it) that he was also suffering from aortic aneurysm. Though assisted by many most kind and solicitous friends, he became progressively worse, and died eventually in a fit of dyspnœa nearly two years after the operation. In fact, he died in the Hospital, whither he was conveyed a few days before his death. A post-mortem examination was made, in accordance with his own desire, that those who had done their best for him might learn thoroughly the lesson of his case. The specimen is now in the Hospital Museum. It shows an aneurysmal dilatation about the size of an ordinary fist, involving all the coats of the ascending aorta. The aneurysm passes straight backwards, and has flattened the lower part of the trachea. This aneurysm was practically continuous with the small innominate aneurysm, from which any firm clots which it may have once contained have entirely disappeared. The right carotid is completely obliterated, and converted into a solid cord for two inches above and below the site of the ligature, which is marked by a considerable [1] constriction. The right subclavian is much flattened in its first part, and is less than half of its normal size.

I believe we may draw the following conclusions in this case: —(1.) That the innominate aneurysm was practically cured by the ligation of the carotid; (2) that in this case the simultaneous or subsequent ligation of the subclavian would not have assisted

[1] This seems to be contrary to the experience of Mr. Ballance. See Report of meeting of Royal Med. Chirurg. Society, December 14, 1886.

matters; (3) that the aortic trouble was incipient from the first, and that it was uninfluenced by the treatment; (4) that the chromic catgut ligature, tightly tied, is a trustworthy and satisfactory material.

Case V.—*Cystic Tumour of Lower Jaw—Removal of Half of Jaw—Recovery.*

Eliza P., æt. 45, admitted on October 30, 1884, had a swelling about as large as a hen's egg, involving most of the ascending ramus and about half of the body of the lower jaw-bone on the left side. The skin covering the tumour is free, and the neighbouring glands are unaffected. The tumour projects from the gum, and occupies the position of the absent lower molars, projecting likewise into the space vacated by the second and third upper molars. The tumour having been previously punctured and injected with iodine solution, without lasting advantage, the patient pressed for radical removal. This was effected on November 12th, through a curved external incision below the border of the bone. The facial artery was intentionally divided, and the ends were at once secured.

After raising an ample flap and dividing the masseter and temporal muscles, it was easy, the bone having been divided in a healthy part near the symphysis, to evert its general mass, when, keeping close to the bone, and working from before backwards, the remaining tissues and muscles were safely severed. The part removed (now in our Hospital Museum) includes the entire tumour with the condyle and coronoid process. The internal maxillary artery was, I am glad to write, not seen, much less wounded, though the inferior dental nerve and vessels were necessarily divided. Chloroform was very effectually given by Junker's apparatus through a catheter passed through the nose. The parts were well washed with strong carbolic lotion, and the flap was replaced and secured in its former position by silver sutures. A drainage tube was fixed at the anterior extremity of the wound. The edges were powdered with iodoform, and an inner dressing of boroglyceride on lint was placed next to the wound. Outside was fixed a Gamgee's absorbent pad. The dressings were changed twice or thrice daily, and the cavity of the mouth was kept reasonably pure and sweet by the nearly constant use of a five per cent. solution of boroglyceride. She took fluid food well from the first, and the wound soon healed, running, in fact, an almost aseptic course. She went home on January 2, 1885, in good health, and with her mouth only slightly drawn to the left side.

The tumour, of which I retain some sections, was a simple cystoma, comprising one large and many small cysts. These were lined with a flattened epithelium, and showed no proliferating internal growths. They had originated within the bone, which they had expanded, and which covered them, within and without, with thin crackling bony scales. I am glad to be able to add that this patient still (September 1886) continues in good health, and there is no return of the tumour.

Soon afterwards another and very strange case of disease of the jaw came under my care.

Case VI.—*Epulis of Lower Jaw—Removal—Recovery.*

Eliza W., married, æt. 20. Had a firm epuloid growth, about two inches by one, growing from the bone contiguous to the left biscuspid and molar teeth, and completely embedding them. The growth had not been noticed many weeks. It was very painful, and was increasing rapidly. It was, of course, determined to remove it, and she was accordingly chloroformed a few days after her admission. The attempt was then made, as usual, to extract the incisor nearest to the growth to gain room for the bone forceps, &c.; but the tooth was immoveable, though my colleagues and myself expended every artifice of twisting and leverage. Precisely similar was the result of an effort to extract a molar. In fact, it was evident that these teeth and the bone were firmly ankylosed. By getting farther from the growth some teeth were, indeed, at last with difficulty removed, but this was only the beginning of further trouble, for the bone was found to be literally eburnated, and almost wholly defied saw, chisel, and forceps. It is, indeed, my surmise that the tissue of the teeth fangs, irritated by the surrounding growth, had invaded the bone, fixing the former and dentinising the latter. At last, after great labour, the growth and the implicated mucous membrane were scraped away, the crowns of the embedded teeth were nipped off, and something like a clearance was effected; but all attempts to remove a portion of the subjacent bone proved fruitless. Indeed, the sole result of one determined effort, which penetrated the bone at a lower level, was to produce considerable arterial hæmorrhage. However, this was soon stopped by a small point of a Paquelin's cautery at a dull red heat. Hard as the bone was, it yielded to the cautery almost as solder does to the heated iron—a fact which suggested an effective termination of the operation by the liberal application of the cautery over the base of the tumour and the refractory stumps. I fear the patient suffered much afterwards, and it was many weeks before

the exfoliation of bone ceased, and she could pronounce her mouth to be healed and comfortable. Still, the result was good at last, and when, very recently, I inquired after her (eighteen months after the operation), I heard that she was well, and free from any return of her formidable malady. Having selected a part of the margin of the tumour containing the root of a tooth, I submitted it for a fortnight to the action of a chromic and nitric acid fluid (1½ and 1 per cent. respectively), which hardened whilst admirably decalcifying it. It was afterwards easy to procure thin transverse sections of tooth and tumour, in which two points were manifested—firstly, that the tumour was a myeloid sarcoma, and, secondly, that it had probably begun in the periodontal (periosteal) membrane; at any rate, this membrane appeared quite separate and typically myeloid.

Epuloid tumours are common in Cheltenham, and it is our experience that they will certainly return unless the bony base is removed or destroyed. I have known them return notwithstanding; and I possess specimens from a case (the patient was an elderly man) in which, on the first recurrence, the giant cells had become, relatively to the other cellular elements, few in number, and where on the next recurrence they had disappeared altogether. In fact, the type had changed into that of a malignant sarcoma, which soon invaded the neighbouring glands and ended his life.

Case VII.—*Rickety Curvature of the Legs—Osteotomy—Recovery.*

W. D., æt. 8, was admitted into the Cheltenham Home for Sick Children on May 25, 1883, with the extreme degree of curvature of the tibiæ and fibulæ represented in the woodcut. In it the remarkable lateral compression of the bones is well shown. These, though measuring about 2½ inches from front to back, were hardly more than half an inch in thickness behind, and diminished to an almost knife-like edge, over which the skin was tightly stretched in front. What made the occurrence of these curvatures more remarkable was the fact that the child had never walked, but used habitually to crawl about in a Hindoo sitting posture. He had been artificially nurtured, and, we may be sure, with little milk. The bones of the fore-arm were likewise distinctly curved. The parents being most anxious to have the limbs, if possible, straightened, assented very readily to the suggestion of operative measures.

Accordingly, the right leg was attacked on October 20, 1883. The operation consisted in incising to the bone at the upper part

of the curve. The periosteum was then peeled off (to be finally replaced), and a wedge of the full depth of the combined bones

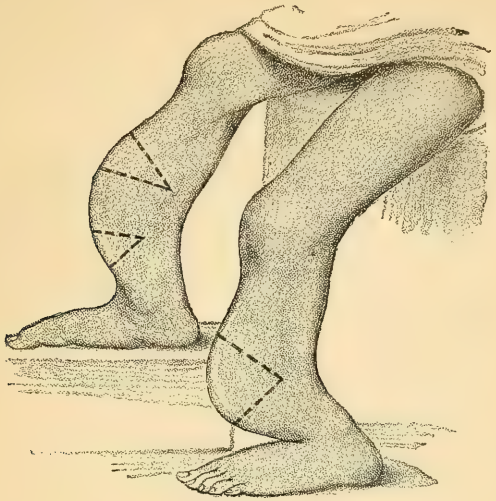


Fig. 1.

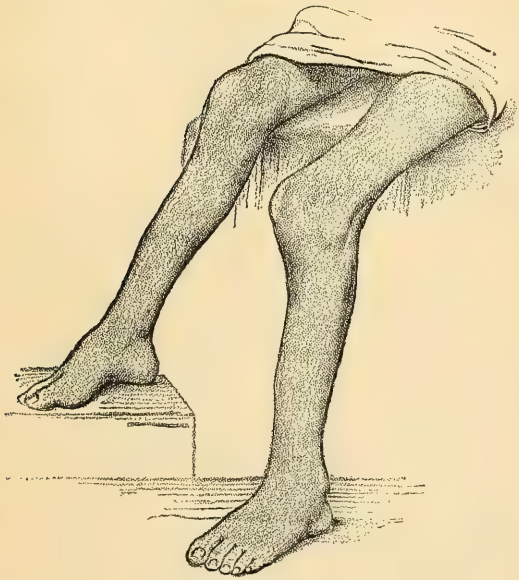


Fig. 2.

(for they were for the most part ankylosed) was removed by the chisel. Lower down a similar proceeding was effected. The

intermediate portion of the bone, about two inches in length (as being less curved), was left intact.

It was then found, on moving the bones upwards to fill the place of the removed wedges, that the limb was nearly straight and distinctly longer than before. Holes were then drilled in the contiguous edges of the bones, which were then firmly sutured together with stout silver wire, the ends of which were allowed to project through the incisions in the skin. A careful disinfection with carbolic lotion (1 to 20) was then practised, the skin wounds were sutured, and a carbolic dressing was applied, the limb being supported on a M'Ewen's splint. The limb was dressed next day, but not after that, for a week; after that again at weekly intervals for about four weeks; after which all the bone and other sutures were removed, skin healing having been long previously accomplished. The patient's convalescence was uniform, and was unmarked by any traumatic fever whatever. Still it was about five months before distinct union occurred, although in the interval his diet had been most liberal, and he had been continually given such bony pabula as Dusart's syrup and phosphate of lime.

About five weeks after the operation a plaster casing had been substituted for the M'Ewen's splint. Even after the bone was firm and straight and the casing had been removed, he managed on more than one occasion to bend or refracture it. Once he is suspected to have tumbled out of bed, and once (such was his restlessness and morbid friability) he was found—no one knows how—to have fractured his right femur in the lower third. However, reposition was in each instance rapidly effected, and a plaster casing for a few weeks made all safe and right. After an unnecessary interval till May 22, 1884, the operation on the left leg was done, differing only from the first in that a single large wedge at the centre of the curve was removed with the saw, and that the ends of the silver sutures were hammered into the bone (over which the periosteum was then replaced), and were left permanently *in situ*. And this treatment was much the better, for firm and permanent union took place at once, and without the slightest immediate or subsequent inconvenience from the buried sutures. Moreover, I may add that, notwithstanding his different mishaps, the left leg has never yielded. Indeed, I propose, should the right bones again give way, to reunite them also by a permanent silver suture.

The second woodcut (both being copied from photographs) shows the present state of the limbs. I wish I could add that he can walk, but this he cannot do as yet, and never has done.

Both of these serious artificial compound fractures were re-

covered from without fever or inflammation, or even a crumb of necrosis or the formation of a drop of pus. And I would like to ask this question: Would such operations in a crowded Children's Home have been justifiable without careful antiseptic adjuvants?

I would also wish to add my conviction that in really severe operations a final washing with a not weaker than 1 to 20 carbolic lotion materially aids success (possibly a 1 to 2000 sublimate lotion would answer still better), though in children the washing should not be repeated, or carbolic poisoning may follow.

I believe I may claim for our small Children's Home that it was among the first of provincial hospitals in which M'Ewen's operation for knock-knee was performed, a double case (the first of several) having been done therein by myself in the autumn of 1880.

Case VIII.—*Lithotrity followed by Lithotomy—Recovery.*

The last case, to which I will make brief reference, presented some points of unusual interest. W. J., æt. 22, photographer's assistant (who had been cut for stone during infancy at the Westminster Hospital), was admitted at the end of November 1884, suffering from urinary irritation, with hypogastric and perineal pain, and occasional hæmaturia. During a persevering sounding, an apparently small stone was sometimes felt and heard. Accordingly he was soon afterwards ætherised (on December 3, 1884), and after much searching the stone was caught and crushed The *débris* was washed out by Bigelow's evacuator (charged with warm boracic lotion), and numerous but unavailing efforts were made to discover other stones. No irritation followed the operation, and after a few days he declared his discomforts to have been removed, and requested and obtained his dismissal. But this condition of comfort only lasted for about a fortnight, after which time his pains returned with more than their original intensity, and he sought readmission. It was then determined to perform lateral lithotomy, which operation was accordingly done on January 6, 1885. The line of incision accorded very closely with that of his lithotomy in childhood, and the bladder was readily entered by the finger, which came at once on a stone lying behind the prostate. It was, however, not free, but lay in a pouch of mucous membrane, to which it was adherent, a portion only of the stone projecting. There was necessity, in fact, for much manipulation with the finger and the forceps before the stone could be detached and removed. In fact, it was not removed before about one-third had been broken off.

The explanation of the complete but only temporary relief of the lithotrity was now apparent. The lithotrity had dealt with the projecting portion only of the stone. The pain was evidently caused by the projection, which was speedily reproduced after its crushing. The stone, which weighed nearly 2 drachms, was phosphatic externally and uric within. He made good progress at first, but his recovery was afterwards retarded by a sharp attack of suppurative orchitis, and the final closure of the wound was much delayed. Frequent daily catheterisation (by keeping the urine out of the wound) helped much, till at last merely a small fistula ($\frac{1}{4}$ of an inch long) remained. This was treated by a deep touch with the point of a Paquelin's cautery, and a deeply inserted silver suture. He left on July 20, 1885, for Bournemouth, retaining the suture, and with the fistula healed, save at a point the size of a small pin's head.

Stone in the bladder is an uncommon malady here. During my thirteen years connection with the Hospital in this town there have been only nine cases of lithotomy therein, and the case just narrated is the only one in which healing was delayed. That it was the sole instance of a repeated lithotomy induces me to account for the delayed healing by the impaired vitality of the scar tissue through which the incision was made. Unfortunately there is but one right place for the lateral incision, and, somewhat unfortunately for the patient, his earliest and his latest surgeons were both right-handed.

The encysted and adherent condition of the stone is a point of considerable interest, more especially in respect to the doubt of such a condition evidently entertained by Mr. Cadge (British Medical Journal, June 19, 1886). Mr. Erichsen, however, has clearly met with such a case (Science and Art of Surgery, 5th edition, vol. ii. p. 558).

THREE MEDICAL CASES

BY

J. E. RANKING, M.D.

Case I.

Case of Splenic Leukæmia treated by Enemata of Defibrinated Bullock's Blood.

Mrs. J., æt. 47. First seen December 18, 1885. Ailing about twelve months with pain in region of spleen, and gradual loss of flesh and strength. Catamenia regular, but latterly very pale in colour. Liable for some years to winter cough and slight bleeding from the gums. Epistaxis occurred once about one month since. There have been no other hæmorrhages. Also about one month since had jaundice with bilious urine and *dark stools* (melæna?). Has had a dry cough for four days. There was intense pallor of the skin and all the visible mucous membranes; the whole surface of the body presenting a yellowish waxy appearance. There was no yellowness of the conjunctivæ. The limbs were much wasted, and the venous network on the backs of the hands could not be traced. The pulmonary sounds were normal, with the exception of harsh expiration and increased vocal resonance at both apices. The cardiac impulse was in the nipple-line. A systolic bruit was heard in the pulmonary area and venous hum at the root of the neck. Nothing abnormal was found in the abdomen except enlargement of the spleen, which was easily felt just below the costal arch. Dyspnœa on the least exertion and palpitation. She never had ague. No glandular enlargements to be felt anywhere P. 100. T. 99.4°.

Rest in bed, with arsenic and a sedative for the cough, were prescribed.

19th.—T. 100°. After this the temperature ranged usually from 99° to 100°.

20th.—Epistaxis. Ergot was given in addition to the arsenic.

21st.—Blood drawn from one finger showed an absolute increase of leucocytes, the red discs being very pale, shrunken, and in a few instances crenated.

26th.—A tricuspid systolic bruit became audible, with venous pulsation in the neck and enlargement of liver. Complained much of "blowing" tinnitus.

January 1, 1886.—Vomiting occasionally during the last three days. Catamenia appeared on 29th, ceased yesterday. P. 120. Epistaxis yesterday. Liver extends 2 to 3 fingers' breadth below edge of ribs. Spleen reaches to within 3 fingers' breadth of the umbilicus and as low as the iliac crest.

6th.—Feels better. Pulse rather slower. A vein apparent for the first time on dorsum of left hand. Takes food badly. To have four ounces of fresh defibrinated bullock's blood per rectum every four hours. Discontinue all medicines.

7th.—P. 96.

11th.—Improvement continues. Slight tinge of pink in cheeks. No hæmorrhage since January 1st. No vomiting since commencement of enemata.

19th.—Still stronger. Great improvement in tint. Venous pulsation in neck less marked. Tricuspid bruit less loud. P. 82. Venous network on dorsa manuum reappearing. To increase each enema by half an ounce.

21st.—P. 76. T. 98.4°.

23d.—P. 78 (recumbent); 84 (sitting). Lower edge of spleen only reaches to umbilical level; anterior border about midway between margin of ribs and umbilicus.

27th.—P. 78. Tinnitus, which has been very severe, is no longer heard.

30th.—Period now overdue has not appeared. Tenderness over left ovary. Spleen lessening. Cardiac impulse at the fifth space within the nipple-line. Short systolic bruit at apex, not heard in the axilla. Tricuspid bruit less marked. Venous undulation in neck, but the veins no longer fill from below.

February 8th.—Ovarian tenderness subsided; spleen not below inferior costal margin, though still felt during inspiration by pressing fingers upwards. Anteriorly reaches from 2 to 3 fingers' breadth beyond the ribs.

16th.—Spleen about 1 finger breadth smaller. Microscope shows increased number and size of red corpuscles, which are deeper in colour. Largest number of leucocytes seen in one field (No. 6, Hartnack) = 20.

17th.—Enemata scarcely retained. Discontinue for seven days.

20th.—Catamenia appeared. Lasted four days.

24th.—To take ferri arseniatis, gr. $\frac{1}{12}$ ter die.

March 22.—Enemata not resumed as improvement continued. Looks and feels well, but skin still has a yellowish tint. Catamenia occurred last week, nearly black; lasted four days. Has had an attack of bilious vomiting. Spleen can only just be felt bimanually.

Systolic bruit along left border of sternum, loudest in the pulmonary area. Pulmonary second sound accentuated.

April 7.—Catamenia began yesterday. During last fortnight has been leading her ordinary life.

From this date she has resumed all the duties of the mother of a large family, and at the present time remains in good health. The spleen is still palpable.

The interest of this case attaches chiefly to the mode of treatment and the rapidity with which all the symptoms subsided after it was begun. Up to January 6 the condition had become steadily worse, at least as regards the anæmia and the symptoms consequent upon it; and it is difficult to dissociate the remedy from the improvement as cause and effect.

The enemata were continued during forty-two days, five being administered in each twenty-four hours. The bowel was rested during the early morning hours, and a cleansing enema was given each day before resuming the remedy.

Defibrinated blood is easily obtained, as butchers are accustomed to preparing it for grooms, who dress their saddles with it.

I regret that I did not possess a hæmocytometer.

Case II.

Case of Sarcomatous Tumour following Fractured Rib.

E. B., male, æt. 13, admitted into the Tunbridge Wells General Hospital, under my care, May 4, 1886. He had been under treatment more or less for the preceding four months for injury to the left side of the chest, caused by a kick, followed, as was believed, by pleurisy with effusion. Two ineffectual attempts had been made to aspirate the chest, the former resulting in the withdrawal of a small quantity of bloody serum, the latter having no result. He was sent in for paracentesis.

His state on admission precluded a complete examination. The following note was made:—Decubitus on left side in semi-prone position. Intense dyspnœa; marked cyanosis; speaks with difficulty. Left side of thorax greatly enlarged, motionless, and covered with huge veins radiating from a prominence, about the

size of a hen's egg, situated below the nipple over the fifth and sixth ribs and intervening intercostal space, where one or two veins are as large as an ordinary lead-pencil. Over this spot a sense of fluctuation is easily noted, and also a bruit systolic in time. The cardiac impulse is felt in the sixth right intercostal space, about half an inch to the left of the nipple line. Cardiac sounds clear but feeble. The left hypochondrium is motionless during respiration. Abdomen distended. About the centre of above-named prominence is the mark of a puncture.

A diagnosis of malignant disease was made. Death took place at 7 P.M. on May 5th.

Post-mortem examination twenty hours after death.—Thoracic measurements, 1 inch below the nipple (over prominence)—right side, 13¼ in.; left, 14¾ in. Round base of thorax—right, 13¼ in.; left, 13¾ in. On opening the abdomen, a moderate quantity of blood-tinged but clear serum escaped. The suspensory ligament of the liver was plainly visible and quite tense, the liver being pushed down so that its edge was on a level with the umbilicus. The left wing of the diaphragm was convex downwards, and depressed 2 inches below the edge of the ribs.

On reflecting the skin of the thorax, it was found to be adherent over the prominence in the mammary line at the fifth and sixth ribs to a fungating mass, from which large veins ran to those on the outside of the chest.

On removing the sternum, the mass was seen to be continuous with an enormous tumour which occupied the whole left half of the thorax, depressing the diaphragm and encroaching upon the mediastinum, pushing the heart bodily over to the right side.

The following note was made of the position of the heart:—

The inter-ventricular groove runs obliquely downwards and to the right, in the right parasternal line. Apex lies in sixth right interspace, half an inch to the left of the right mammary line, and is formed by the left ventricle, which comes forward for about three-quarters of an inch. The pericardium is not adherent, and contains a small quantity of serum.

On raising the heart, the left side was found somewhat flattened by the pressure of the tumour, which was accurately moulded round it and the root of the large vessels, so as to form a perfect cast lined by the parietal layer of the pericardium, and retaining its shape after the heart was removed.

Tumour.—This was with some difficulty removed entire, except a small part, where it was intimately connected with the fifth and sixth ribs at the afore-mentioned spot. Its surface was found to be accurately applied to the internal surface of the thorax and

indented by the ribs. The left lung was found pressed into the vertebral groove; collapsed and sinking in water; weight, 8 lbs. 5 oz. On section, soft, brain-like throughout, with numerous hæmorrhagic spots, becoming diffluent and bloody towards the point of union with the fifth and sixth left ribs. Beneath the



Fig. 1.

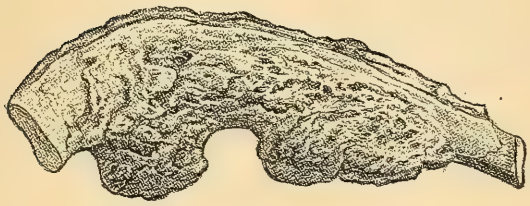


Fig. 2.

spot where it was adherent to the ribs there were several foci resembling residual pus, and one small cavity about half an inch across, and extending inwards for about an inch and a half from the ribs, which at this point were thickened, and showed evident symptoms of somewhat recent oblique fracture.

The right lung was healthy. No secondary deposits discovered in any organ.

This case presents a good example of traumatic malignancy.

The boy's health had been perfect up to the date of his accident, and there was no family history of malignant disease.

The earliest symptoms, pain and dyspnœa on exertion, appeared about a week after the injury. The whole duration from receipt of injury to death was four months.

A point of great interest is the position occupied by the heart. It is frequently held that, in cases of left-sided intra-thoracic pressure with extreme displacement of the heart, causing impulse in the neighbourhood of the right nipple, this impulse is not truly apical, but is due to the impact of some part of the ventricle remote from the apex. From the condition of parts here found, it is manifest that even such complete cardiac rotation may occur as to bring the apex of the left ventricle to the front, close to the right nipple.

Case III.

Case of Syphilitic Polio-myelitis.

G. J. H., æt. 36, consulted me on March 31st, with the following history:—On the morning of the 26th he first noticed loss of power in the right lower extremity, and to a much less degree in the left also, which has steadily increased. To-day he can only get upstairs by sitting upon each step and pushing himself up with his left leg; the right doubling up when he bears any weight upon it.

There was no pain, but slight numbness of the under surfaces of the toes on the right foot.

Examination showed diminished power of motion in both lower extremities, but especially on the right. Sensation lessened over the numb area.

Reflexes.	*Right Leg.*	*Left Leg.*
Plantar, . .	Absent. ...	Very slight.
Knee, . .	Absent. ...	Variable, but lowered.
Higher, . .	Normal. ...	Normal.

No vesical nor rectal disability. Power of erection of the penis lost since the 25th inst. Pupils unequal, right larger than left; acting to light and during accommodation.

Previous history.—Strong gouty heredity. Contracted some form of venereal disease, called gonorrhœa, one month before marriage, ten years ago. Three years ago had right ptosis, for which he was treated by a distinguished provincial surgeon, who considered it gout and prescribed liq. potassæ, iodide of potassium and colchicum. This lasted about four weeks. During the winter 1885–86 was much exposed to wet and cold in wild-fowl shooting.

Ordered hydrargyrum c̄ creta gr. i. and potass. iodid. gr. x. ter die, and friction with linimentum crotonis to the spine over the lumbar enlargement of the spinal cord.

April 1st.—Left leg weaker. Urine clear; very acid. No albumen nor sugar. No uric acid nor uratic deposit.

3d.—Numbness in left foot similar to that in right. Slight vague pains in right leg. Complete paraplegia.

4th.—Pains also in left leg. Motor paralysis in both legs complete. Can tell the position of limbs quite accurately.

5th.—Slight return of power in left leg.

7th.—Slight shooting pains in both legs. Left cremaster reflex diminished (?). Faradic reaction not completely lost. Numbness extends higher up the legs.

9th.—Sensation diminished below the knees, most marked in the right leg.

11th.—Painful swelling of left calf, apparently due to phlebitis. Ordered a saline purge.

14th.—Calf less swollen and painful. Left foot œdematous. Says he can get about the bed on his knees.

16th.—Considerable wasting of muscles in both limbs; but he can move the right leg quite briskly, the left only when supported under the knee. Reflexes unaltered. Erectile power returning.

19th.—Can cross right leg over left when sitting up. To have massage applied for thirty minutes daily.

26th.—Can stand and walk holding by the head of his bed. No numbness except on plantar surfaces of great-toes. Reflexes unaltered.

30th.—Pain and some swelling of both calves. Omit massage for three days.

May 2d.—Swelling similar to that of April 11th.

4th.—Swelling disappeared. Can move both legs freely. To go out of doors in a bath-chair.

6th.—Left knee-reflex returned; both plantar reflexes returning; that on the left side elicited more easily.

8th.—Can rise, walk, or sit down without assistance.

10th.—Right knee-reflex slightly marked. Can stand and turn round with feet close together and eyes closed. Walked 1½ mile yesterday without fatigue. To continue the treatment in a modified form.

October 14th.—Has remained quite well.

Remarks.—Whatever opinion may be entertained as to the nature of the lesion in this case, whether a myelitis or a syphilitic outgrowth from the meninges causing pressure upon the cord, no doubt can exist (i.) as to its specific character; (ii.) that so fortunate a result was mainly due to the early recognition of syphilis.

The diagnosis had to be made between three possible causes:—(1.) gout; (2.) myelitis from exposure to damp cold; (3.) syphilis.

1. *Gout.*—In spite of the strongly-marked gouty inheritance, none of the more usual forms of gouty inflammation had occurred; and a ptosis which recovered in four weeks when treated by five-grain doses of iodide of potash three times daily was quite as likely to be due to syphilis.

2. *Syphilis.*—In addition to the ptosis, the following evidence was elicited:—The gonorrhœa (?) contracted one month before marriage was cured, and he was advised that he might marry. Very shortly after his wife contracted some disease, which was considered to have been communicated by him, although the nature

of it was not disclosed. She remained some time under treatment, but has never become pregnant, although in quite good health otherwise. He himself had become prematurely bald, though no sore throat nor eruption had ever been noticed.

Further, some interval having elapsed since previous exposure, the acute onset of the symptoms were in favour of syphilis.

It will be noticed that amelioration of the symptoms occurred almost exactly in the inverse order of their onset.

A case in which forty-four days sufficed for the supervention of complete paraplegia and its complete cure must certainly be rare.

THREE CASES OF MULTIPLE PERIPHERAL (ALCOHOLIC) NEURITIS IN WOMEN.

BY

SIR DYCE DUCKWORTH, M.D.

I propose to give the particulars of three cases of so-called "alcoholic paraplegia" which have been under my care in the Hospital in the last two years. There seem to be good reasons for recognising such cases as peculiar, both as to their ætiology and clinical features. They were formerly believed to be due to a lesion of the spinal cord, but are now proved to depend on a wide-spread disorder of the peripheral nerves of the extremities.[1]

The characters of the paralysis are commonly well-marked, and when once appreciated are not difficult of recognition. Women under forty years of age provide most of the subjects of it, and, though it is notoriously difficult to secure history of alcoholic intemperance in women thus addicted, such history can, with tact, be usually elicited.

The first case I record is that of M. A. W., æt. 26 (meretrix). Was admitted into Elizabeth Ward on June 11, 1884. Fairly well-nourished about the face. Legs and arms much wasted. Quite unable to stand. Distinct history of syphilis five years ago. Two years since, while walking, suddenly lost the use of both legs, fell down, and had to be taken home in a cab. Has been bedridden ever since. Has always been able to move the legs, and has had much pain in them. Was in St. George's Infirmary for two years, and while there the arms became affected, at first with pain, then with loss of power. The wrists dropped, and the fingers were drawn up. No indications of lead-impregnation. Three years ago she drank spirits very freely. Hæmoptysis occurred first six months ago. No tremors, and no nystagmus.

[1] Lancereaux, Dreschfeld, Hadden, and others have given unequivocal proofs of this.

Pupils large, especially the right. Both legs are drawn up on the abdomen, are greatly wasted, flabby, and painful all over. No loss of sensation. The legs can be straightened with very little force, but this causes much pain. Knee-jerks absent. Sole-reflexes natural. The condition of the arms is similar to that of the legs. Sphincters unaffected. The urine is natural. In both lungs signs of consolidation and softening. Heart-sounds natural. Pulse, 138. Temperature, 102°. Urine acid, void of albumen. Much cough, and frothy muco-purulent sputa. Tongue moist, very tremulous. Her mother and one brother died of phthisis. Five years ago had a similar loss of power in the legs, which lasted three months. No signs of syphilis in the throat. Electrical examination showed considerable muscular degeneration, especially in the parts supplied by the anterior crural nerves. The extensor muscles of the arms gave the same reactions. Discs natural. Diarrhœa supervened and general failure of power. Passed water into the bed. Hectic. Death on July 17th. At the autopsy the chest only was examined, and the lungs were found riddled with tubercles and excavated. No further investigation could be procured.

I headed the patient's board, "Phthisis, both lungs, poliomyelitis anterior subacuta." Although I was satisfied that the paralysis was due to alcohol, I regarded the lesion as localised in the cord, not recognising at that time the features of multiple neuritis. The condition of "foot-drop" was not specially noted. I have now, however, no doubt that this case was an example to be classed with those I now record. The recurrence of the disease after recovery from a former attack, the alcoholic habits, the age and sex of the patient, and the marked pains in the affected limbs, all go in support of this view of the case. The absence of sphincter-troubles and of bed-sores are additional proofs.

The second case was that of S. B., æt. 36, housewife, admitted to Elizabeth Ward, October 8, 1885. A slender, wasted woman, unable to stand. Married seven years. Had no children. Ailing for about a year, and has been bedridden for ten months. Previous health good, with exceptions of rheumatic fever twenty-six, and (?) typhus fever twenty years ago.

No family history of phthisis can be elicited. Her mother died at forty-two of "inflammation of the lungs." Father living. Present illness began with pulmonary symptoms, pain in the chest, shortness of breath and cough. No history of hæmoptysis or of night-sweats. Cough has become worse and expectoration copious. Menses absent for nine months. Three months after taking to bed, the legs, it was stated, began to waste, and became very weak.

On examination of the chest there were found well-marked signs of consolidation and softening over the greater part of the left lung, and some earlier signs at the right upper lobe. The expectoration was copious, muco-purulent, nummular, and contained bacilli of tubercle. The pulse was commonly about 80, and was never noticed to be above 90 in the minute. The urine had an average sp. gr. of 1020, contained a cloud of albumen on some occasions, but was practically void of it throughout the Hospital sojourn. Abdominal viscera seemingly natural. Weight on admission, 4 st. 10 lbs. The temperature varied very much, having a mean of about 100° Fah. It never exceeded 102°, and the highest ranges were recorded always in the evening. The nails were incurved and the finger-ends bulbous. There was great emaciation and weakness, the lower limbs consisting, seemingly, of little else than integument and bone, and scarcely capable of movement. The knee-jerks were absent. Sensation appeared natural. Dr. Steavenson examined the limbs electrically with the following results:—galvanic and faradic irritability much impaired in the muscles of the lower extremities. Very strong currents were used. Marked loss of electro-sensibility. CCC in muscles of left thigh to forty-two cells. A very strong faradic current produced a slight contraction in left peronei muscles. A weaker faradic current than that used on the legs produced contraction readily in the muscles of the left upper extremity.

Galvanism was employed daily to the legs. Good diet with wine was given, and quinine. Carbonate of ammonium and senega and turpentine vapour were afterwards prescribed to promote freer expectoration. Considerable improvement took place, and weight was steadily gained. The knee-jerks returned in slight degree in about six weeks, but little change in the size or plumpness of the legs was visible. On inquiry it was found that soon after taking to bed the patient "had been ordered" gin and wine. She drank a quartern of gin daily, and a quartern and a half of port-wine for three months. After this the quantity of spirit was diminished.

The patient remained in Hospital till the 15th of April 1886. The chest-signs made little progress, but nowhere tended to clear up. The expectoration was always profuse. The signs on the right side showed gradual involvement of the lung. Weight was, however, steadily gained, sixteen pounds being added in six months.

It was noted soon after admission that there was much pain in the feet, described as sharp and burning, and this symptom was complained of occasionally subsequently. On touching the feet there was a sensation of "pins and needles."

There were no marked symptoms of pain at the onset of the paralysis, and none of any special or systematic lesion of the

cord. Pain and numbness were, however, felt in the hands. Difficulty in picking up pins, &c., when in the Hospital. The patient remained quite paraplegic and unable to stand. There were frequently noticed irregular patches of flushing on the face and most other parts of the body, seen most marked on awaking from sleep. There was no œdema of the feet. Some injection of small vessels was noticed on the dorsum of each foot. The thighs measured (8 inches above patellæ) 10¼ inches; legs, at thickest part of calves, 7½ inches. This woman remained in the Hospital for about seven months, gaining weight gradually. The lung-signs hardly underwent any noteworthy change.

She had to be carried out of the ward to go home, being quite unable to stand. The legs resembled two sticks.

Eight months afterwards I sent for this patient to come and report herself. She was then hardly recognisable. Since leaving the Hospital she had undergone no medical treatment. She stated that she became able to stand in two months after we last saw her, and afterwards gradually gained power in the limbs so as to get about. Had no more pains in the legs. Is now able to walk with crutches or by leaning on some one, and came up three flights of stairs into the ward to-day. In walking, she has to look at her feet. Cannot stand with the eyes shut or her feet close together. She has become quite obese, and weighs 9 st. 12 lbs. Her complexion is florid. The legs are large and plump, measuring 12½ inches round thickest part of calves, showing a gain of five inches in eight months. Most of this is, however, due to fat, and there is also œdema of the feet and ankles. Sensibility appears to be natural, and is not delayed. Knee-jerks absent. Complains of pains in the legs at night. The arms are increased in size. With the dynamometer registers 60 lbs. with the right, and 50 lbs. with the left hand. The finger-ends are now only very slightly bulbous and incurved. Some tremulousness of hands and fingers, and movements somewhat like athetosis. Writes very fairly. Breath alcoholic. Expansion of chest defective over left front. Percussion-note less good than on right front. Respiration very feeble over left upper lobe, with rhonchus. Behind, some crackling heard on deep inspiration. Nothing noteworthy at right apex. Cough now unimportant. Has had no hæmoptysis.

On electrical examination, no contractions were obtained in the left leg with either faradic or galvanic currents. In the right leg all the muscles reacted very slightly to strong galvanic currents. The peronei muscles alone reacted slightly to a strong faradic current.

The improvement in several respects in this case was very remarkable. There seemed reason to believe that habits of in-

temperance were still maintained, though the patient herself stated she did not take spirits as freely as at the beginning of her illness. With recurrence of spirit-drinking, in these cases, relapses are not uncommon.

The third case was that of N. N., a dressmaker, æt. 20 ; married at 17. An only child ; both parents living. Paternal grandmother died of phthisis. Two years ago she had a child which died at the age of three months. Has led a very unhappy life with her husband, who has now deserted her. Admitted to Elizabeth Ward on November 3, 1886. Was carried into the ward, being quite unable to stand. Well nourished about the face ; rather pallid ; dark rings round the eyes. Body spare ; arms and legs much emaciated. She gives an unsatisfactory history of her illness, her memory being defective. After many cross-examinations and reference to her mother, the following account was gathered. Two months ago, after getting her feet wet, found on the following morning that her legs were stiff and painful below the knees. The pain extended to the thighs. Four or five weeks ago she fell in the street, the legs giving way under her, and she has fallen several times since, having been led about by her mother. Has kept her bed for the last month. For six weeks has had a bad cough, expectorating yellow phlegm, and has been losing flesh. Has had vague pains in the limbs and most parts of the body. My first impression about the case was that it was an instance of hysterical paraplegia, but further examination soon dispelled that view of it. No signs of lead-impregnation. Teeth very good ; tongue slightly coated; appetite fairly good. Before admission frequently vomited food. No pain after food. Bowels regular. No affection of the sphincters. Heart-sounds natural. Pulse frequent, 146, small, soft, regular. Temperature 100°. Respirations 38. The chest is not symmetrical, there being contraction of the whole right side with impaired expansion. Dulness at right base as far as lower angle of scapula. Breathing very feeble, annulled at base, and accompanied with creaking friction-sounds. Heart-sounds heard over left back. Left lung free from dulness. Bronchitic sounds on both sides. Mucous expectoration. No history of hæmoptysis. No clubbing of finger-ends. The abdominal viscera natural. Urine 1021; phosphatic cloud on boiling ; trace of albumen. No glucose. Catamenia regular. Vision good. No nystagmus. Discs natural. Spine straight ; no tenderness on percussion. Legs much wasted. Feet extended, "dropped," slightly adducted. No rigidity. Can raise each leg about a foot off the bed, the left being the weaker. All the muscles appear to be wasted, especially the extensors of the feet. Knee-jerks absent. No clonus. The arms are also wasted ; slight feebleness

of extension, but there is no wrist-drop; on extension the ulnar extensor seems more powerful on each side. With the dynamometer in right hand registers 23; in left, 15 lbs.

Further cross-questioning elicited the history that at the beginning of the illness there were very severe pains in the hands and arms. At one time, to pick up a pin or take a cup into the hand caused sharp pains in the fingers and hand. In the legs common sensibility appears to be blunted as high as the knees.

Dr. Steavenson made an electrical examination on November 5, and found impaired faradic contractility in extensor muscles of both feet and hands. The affected muscles reacted to the continuous (galvanic) current (CCC > ACC). Sole-reflexes much diminished. On inquiry, I learned from this woman that she had in her unhappiness resorted to whisky-drinking, and had taken a good deal, never becoming "drunk," however. She had also taken a good deal of beer. Her mother, a very decent woman, was quite unaware of these habits.

Good diet was ordered without stimulants. Galvanic current to the muscles of the arms and legs daily. Quinine and iodide of potassium with cod-liver oil were prescribed, also friction with compound camphor liniment for the limbs.

The pulse continued frequent, 132 to 138, and of increased tension. Temperature varied from 99° to 101°, with slight rise in the evenings.

November 10.—Diminished sensation to pain is noticed in both legs, with apparent hyperæsthesia. Muscles of calf very tender when compressed. Feeling of "pins and needles" over backs of hands.

November 15.—Sensation of touch natural in arms, also in legs above knees. Below left knee can feel on both aspects of limbs, but refers both sensations to outer sides; can feel on outer side of right, but not on inner side. Sensations of heat and cold distinctly retarded, but well-felt below knees, but states that ice feels hot. (Eyes covered up during these inquiries.) Left leg is more affected than the right. Much tenderness on flexing the extended feet, and extreme muscular hyperæsthesia in both legs. On trunk, sensations to touch, pain, and temperature natural, perhaps a little too keen. Picks up a pin with great difficulty. In writing is very clumsy with the pen, and scrawls almost illegibly.

On November 25 Dr. Steavenson made another electrical examination, and reported that faradic contractility in the extensors of the fore-arms had improved. Interossei reacted in both hands. Marked loss of faradic contractility in extensors of both thighs and legs. Loss of galvanic irritability, and impairment in other muscles. Where contractions could be obtained AOC approached

in amplitude CCC. The non-extensors of the lower limbs reacted readily to the faradic current. No loss of electro-sensibility.

Some slight general improvement ensued, especially in the power of the fore-arms. Galvanism was daily employed. Quinine, with iron, arsenic, and strychnia, was now substituted for quinine and iodide of potassium. The cough diminished and the mental condition became clearer.

December 20.—Electrical examination to-day. Peronei muscles (left) CCC > ACC, CCC good, ACC very feeble. COC and AOC nil. Extensor muscles, ACC > CCC; calf muscles, CCC > ACC. All muscles react to faradism. Peronei muscles (right) CCC > ACC; calf muscles, CCC > ACC; extensors, CCC > ACC. The calves have gained $\frac{1}{8}$ inch since December 6. Is improving slowly in all respects. Under right clavicle, crack-pot sound elicited. Physical signs of a cavity in right upper lobe. No expectoration now. Bacilli have not hitherto been detected.

Dr. Buzzard kindly came to see this patient, and considered the case a very characteristic one.

Objection has been taken to the special ætiology claimed for cases like the foregoing. It is true that they have only been recently differentiated. It is stated as an objection that spirit-drinking and alcoholic intemperance are common enough in women, and that, therefore, such cases as have been described above should be much more frequently met with. The answer to this is, that alcohol does not manifest its ravages in all persons in one particular line. The lesions due to alcoholic excess vary not only in different persons, but actually in the two sexes. One man suffers in his liver, another in his vascular tissues more especially. In one case, the hepatic mischief is rapidly induced; in another, the same injury is not apparent till after the lapse of many years of intemperance. Women appear to suffer at an early age from the form of neuritis above described, and in far larger proportion than men. Proof of the localised disease in the peripheral nerve-trunks is forthcoming from postmortem examination, which likewise demonstrates the immunity of the spinal cord in such cases. The absence of any interference with the sphincters and the freedom from tendency to bed-sore adds force to the belief that the cause of the paralysis is not central, but peripheral. What progress there is is also centripetal (neuritis ascendens). In none of the cases I have related was there any appearance of glossy skin, which has sometimes been noticed on the fingers.[1]

[1] The face in two of these cases gave no indication of a severe wasting disease. This was pointed out by Dr. Jackson of Boston in 1822 (quoted by Dr. Dreschfeld in *Brain*, vol. viii. p. 434, 1886).

In the second case, the patient, after recovery to a considerable extent, presented several ataxic symptoms. These were not observed in the early stage in any of the three; and it is to be noted that there was sudden onset of severe paralysis in the first and third cases. In the second case, the patient was bedridden before the wasting and loss of power were noticed. In the third case only were there any of the mental symptoms which have been frequently noted in this disease. The tendency to lung-mischief was marked in all the cases, and tuberculosis appears to be a common concomitant. It seems highly probable that there are wide-spread degenerative changes throughout the body in any case of alcoholic paralysis, hepatic cirrhosis and nephritis being not infrequent. The spinal cord is commonly but little, if at all, affected. The nerve-fibres and the perineurium are chiefly involved, a sclerotic change in the fibrous investments leading to degeneration of the proper nerve elements in most cases.

An interstitial myositis is also found with fatty infiltration and degeneration of the sarcous elements. The prognosis is certainly bad in many cases, and unless the disease is recognised early, and treated by withdrawal of stimulants, the outlook is very unfavourable as to recovery of power.

The second case illustrates a very remarkable power of recovery so far as the lungs were involved, the patient being exposed meanwhile to the most unfavourable conditions.

In treatment, galvanism, shampooing, and friction with stimulating liniments appear to be of use. Internally, it is best to give iron, arsenic, quinine, strychnia, and cod-liver oil. A nourishing dietary is important. The application of the galvanic current is usually attended with much pain. It must therefore be employed with caution, and of only moderate strength.

THE RARER SEQUELÆ OF GONORRHŒA.

BY

W. BRUCE CLARKE, M.B.

It is only within the last fifty or sixty years that the connection between gonorrhœa and the disease which is known as gonorrhœal rheumatism has been thoroughly established. It is true that early in the last century some of the symptoms were described by W. Musgrave in a small work entitled "De Arthritide Anomalâ," Oxford, 1707; but his observations remained buried in oblivion until Sir Astley Cooper gave the first classic account of the disease, and Sir Benjamin Brodie detailed several well-marked cases in his work on diseases of the joints. Since that time the disease has been well recognised in this country.

There are, however, several affections allied to and connected with this condition which, though they have received here and there incidental mention at the hands of various authors, are not by any means universally admitted to belong to the sequelæ of gonorrhœa, if they have been ascribed to it at all. I allude, as the cases I am about to relate will show, to flat-foot, acute inflammations of joints, which occasionally pass on to suppuration, and to periosteal outgrowths from the bones. Before considering these affections, it may be as well to glance at the statements on gonorrhœal rheumatism which obtain currency in most works on the subject. This affection is usually described as a form of rheumatism, which occasionally comes on at the end of a gonorrhœa, and attacks most commonly the knees, and more rarely the shoulder, elbow, and smaller joints of the body. It is very chronic in its nature, and is liable to recur with each fresh attack of clap. By some authors stress is laid on the necessity of curing the discharge if the rheumatism is to be speedily got rid of; but this point, which is well illustrated in Case III., is not so often insisted on as it should be. Erichsen[1] describes another variety, which is more

[1] Science and Art of Surgery, ed. vii., vol. ii. p. 884.

acute, and gives rise occasionally to acute inflammations of single joints, and this acute condition forms the subject of a paper by Davies-Colley,[1] but the question of suppuration is not alluded to. Allusion is made by both these writers to the affection of the soles of the feet, and to the pain which usually occurs there during the course of an attack, and this same symptom is referred to by other authors;[2] but no significance is attached to its occurrence, and its remoter consequences are not mentioned, because, apparently, they are unknown. The most detailed account of the affection of the feet is given by Brodie.[3] In describing one of his early cases he says: "The whole of the foot became swollen; there was inflammation of the synovial membranes of the ankles; and it appeared to me that the inflammation of the feet themselves arose from inflammation of the synovial membranes belonging to the joints of the tarsus, metatarsus, and toes." It will, however, be evident from the following cases that other sequelæ may present themselves, and give rise to far graver conditions.

Flat-Foot.

The only allusion which I can find to this subject is contained in an article by Mr. Marsh on Orthopædic Surgery,[4] in which he makes the two following statements:—"Exceptions to the origin of flat-foot in debility or excessive fatigue of the muscular system are to be observed in cases in which the affection depends on softening and relaxation of the ligamentous structures in the sole, resulting from rheumatic or gouty inflammation, or from so-called gonorrheal rheumatism. In these instances, though the muscles subsequently suffer, the condition originates in the inflammatory softening of the ligaments." "Amongst the worst forms of flat-foot that I have seen are those already alluded to, which result from rheumatic or gouty inflammation, or from the affection termed gonorrheal rheumatism."

The following five cases, three of which have come under my notice in the Surgery at St. Bartholomew's Hospital during the last two years, will illustrate the progress and course of the disease. In several cases, as will be seen from their history, the patients did not come to be treated for the flat-foot, and it was only incidentally discovered during the course of an examination for some other affection. It is, I imagine, partially on account

[1] Guy's Hospital Reports (1882), vol. xli. p. 187.
[2] Brodhurst, Reynold's System of Medicine, vol. i. p. 924.
[3] Pathological and Surgical Observations on Diseases of the Joints, ed. iv., p. 62. Boston, U.S.
[4] St. Bartholomew's Hospital Reports (1882), vol. xviii. pp. 32, 34.

of the transient character of this affection in many cases that it has so long escaped general recognition, whilst in the severer cases the relation of cause and effect is not appreciated, because, though the cause is infinitely common, the sequelæ to which I am alluding are rare, and, if they are noticed at all, are ascribed to some other origin.

Acute Inflammation of Joints.

Though this subject, as has been already stated, has received some notice both at the hands of Erichsen and Davies-Colley, it is not by any means generally recognised. It begins, as a rule, by some swelling and tenderness of a joint, usually the knee, elbow, shoulder, or ankle, and appears at first to involve rather the tissues round the joint than the joint itself. The effusion into the joint is at first small in amount compared with the surrounding œdema and swelling, which is the most evident sign, whilst the exquisite tenderness which follows either pressure or the slightest movement reminds one rather of an attack of gout or acute rheumatism, than of a rheumatism dependent on gonorrhœa. All these points are well exemplified in a case which is referred to later, which I had the opportunity of most carefully watching.

Acute Suppuration.

In rare cases an attack of gonorrhœa ends in pyæmia, and suppuration ensues in various joints, as in any other pyæmic attack; but the case which I shall detail differs from these, as it came on during the course of an ordinary attack of gonorrhœal rheumatism, and the patient made a good recovery, though with impaired movement in his joint.

Its claim to be considered gonorrhœal in origin rests on the fact that the patient had had gonorrhœa, of which nothing remained but an apparently insignificant gleet; an attack of gonorrhœal rheumatism of ordinary severity then supervened, and one joint suppurated.

Ostitis and Periostitis.

These affections, like the preceding, occurred and were watched during their process of development in patients who were the subject of a well-marked attack of gonorrhœal rheumatism.

Case I.—R. W.,[1] age 22, was under my care as an out-patient at the West London Hospital for gonorrhœa in 1881.

[1] In this instance it was not till some time afterwards that I appreciated the true relationship between the gonorrhœa and the flat-foot, and but few details were entered in my note of the case.

March 17.—Had had his attack about six weeks, and was progressing towards recovery. He complained of having felt a slight weakness in his foot during the last few days. The pain was situated over the instep, and he could not stand on tiptoe. There was also some pain on pressure upon the sole. Compared with the other foot, he had decided flattening of the arch. He was ordered to wear a pad in his boot, which gave him relief.

October 24.—I have no further note of him till this date, when he reappeared with another attack of clap. On inquiring after his flat-foot, he said it soon got better, and after wearing the pad for a month or two, he had taken it out. The affected foot was decidedly the flatter of the two, but it appeared to cause him no inconvenience, and he did not complain of it again during his attendance as an out-patient.

Case II.—F. A. came to the Surgery at St. Bartholomew's on October 11, 1885, with an attack of synovitis in the left knee following injury. Whilst we were examining his knee, my attention was attracted by the appearance of his right foot, which was evidently flatter than the left. He explained the fact as follows:—About five years ago he had an attack of gonorrhœa, followed apparently by pains in the limbs of a rheumatic character, presumably gonorrhœal rheumatism. His foot pained him a good deal, and he applied at some hospital, where he was told he must wear a pad in his boot. He used the pad till the boots were worn out, and then found he could get on without it. He has had no pain in the foot since, and, so far as he knows, it causes him no inconvenience. On asking him to stand on tiptoe, it was very evident that he could not stand so long or so easily on the affected foot as on the other.

Case III.—N. J. In this case, which is further alluded to later on as an instance of the development of exostoses, the flat-foot, as will be seen by the history, came on during the course of the disease, and was treated by means of a pad, like the preceding case. After wearing the pad for several months, the patient was able to dispense with it, and at the present time, though unable to stand long on tiptoe, has scarcely any perceptible flat-foot, and is able to walk ten or fifteen miles with ease.

The two remaining cases of flat-foot are instances in which the lesion was of a far more severe nature, and was comparable rather with those extreme cases referred to by Mr. Marsh.

Case IV.—E. W., age 29, came to the Surgery at St. Bar-

tholomew's Hospital on February 8, 1886, complaining of an ulcer of his leg. As soon as he took his boots off, it was quite evident that both feet were very much flattened, especially the left. On this side the head of the astragalus was quite touching the ground, and a horny mass of epidermis had developed over it on the sole. The arch of the foot was firmly fixed in its acquired position. The right foot was much flattened, but the head of the astragalus was not obviously displaced, though, when carefully examined, it could be distinctly felt in a lower situation than it should be. He was obliged always to wear boots the centres of which were specially strengthened; but he said that after a hard day's work he had a good deal of pain in his feet. He states that both his feet became bad seven years ago during an attack of gonorrhœa; so far as he can recollect, they reached their present condition after a month's pain. He was quite unable to walk during the attack, but does not remember having had any pain in any other part of his body at the same time.

Case V.—S. C., age 29. August 19, 1886, came to the Surgery at St. Bartholomew's Hospital complaining of his knees, which he said were often swollen. He stated that fourteen years ago he first suffered from gonorrhœa, and two years later, during his second or third attack, he noticed his knees and feet swell, and he has been troubled with rheumatism ever since, which is much worse at times. He is rarely, if ever, without some pain. He usually wears a boot for flat-foot, which came on about a year after the rheumatic pains. He has had a gleet ever since, which he said he had been advised to disregard, and declined to have it treated.

At present both his knee-joints are distended, and he walks with two sticks. He complains of stiffness about his ankles. Their range of movement is diminished, but they are not painful at the present time. In both his feet the condition of flat-foot is extraordinarily well marked, more so than in any case I have ever seen. The centre of his boot is strengthened so as to enable him to walk, but he says he can rarely manage to get more than a mile or two. His right shoulder and elbow are so slightly moveable that his right arm is almost useless. He thinks his joints are getting gradually worse.

Case VI.—E. L., age 23, fell down on June 19 and slightly grazed her elbow, but thought nothing of it, and felt nothing for several days, when she noticed that her right elbow began to swell. She got some lotion for it, but it became gradually worse, and on June 29 she came under Dr. M'Cann's care, who put her

arm on a splint, as it was exceedingly painful. Her temperature at this time ranged from 101° to 104°.

On August 2 I saw her with Dr. M'Cann. She said it was less painful than it had been. Her temperature was 99°. The neighbourhood of the elbow-joint was much swollen, enlarged, and painful on pressure or on movement. The joints of the fingers were also enlarged and swollen and glazed. The wrist-joint presented similar appearances in a slighter degree. On making inquiries, it turned out that the patient had just acquired gonorrhœa at the time of the accident, and was still suffering from a vaginal discharge. Added to this, there was the fact that she felt nothing of the elbow till several days after her fall, and that the fall itself appeared to have been insufficient to cause so much disturbance. We came, therefore, to the conclusion that the case was one of gonorrhœal rheumatism. The arm was removed from the splint; and when I saw her about a fortnight later, the joint inflammation had almost entirely subsided, leaving but slight power of flexion and extension.

The patient was subsequently submitted to a course of friction and warm baths, under which treatment the power of movement rapidly improved.

Case VII.—E. W., age 22, came to the West London Hospital in April 1822, suffering from an attack of clap. After he had been attending some weeks and was nearly well, he came one day complaining of pain in his knees and elbows.

May 21.—Admitted. The right knee is much swollen and painful, and so is the left to a slighter extent. He complains of a great deal of pain in his left elbow, which is very painful to the touch, and much swollen on either side of the olecranon. Temperature 102.8°.

May 24.—The elbow is more swollen and excessively tender. It has been placed on a splint. His temperature has never been lower than 100°. The knees are now much less swollen than they were, but the ends of the condyles of the right femur appear to be very distinctly enlarged, thickened, and tender.

May 29.—The elbow-joint is, if anything, more painful and enlarged. Two incisions made, one on either side of the olecranon. A considerable amount of thin somewhat ichorous pus escaped from the joint. Drainage tube; gauze dressing; spray.

June 24.—The patient has been quite easy since his elbow-joint was opened. The wound is now closed entirely. Splint removed. His other joints give him no pain, and, with the exception of the right knee, appear to have returned to their normal condition.

Now that the effusion has disappeared from the right knee-joint, the ends of the condyles can be very distinctly felt to be thickened and nodular at the edges. The movements are not so free in this joint as they are in the other knee.

June 30.—Was discharged. Able to move his elbow-joint slightly. Scarcely any power of pronation and supination.

He was seen a month or two later. The bony outgrowths about the end of the femur were unchanged, but the movements in the joint were perfect. In the elbow-joint the movements both of flexion and of pronation and supination were much improved, but still incomplete. There was some bony thickening around the olecranon and the condyles of the humerus.

Case III. (already partially referred to).—N. J., age 19, a student, first came under my care in October 1884 for gonorrhœal rheumatism, giving me the following history.

July 1881.—Right knee became swollen in the course of an attack of gonorrhœa, and he was in bed with it several days. After this he imprudently got up and took a cold bath, and the swelling and pain returned with great violence, so much so that a consultation was held as to the advisability either of opening his joint or even performing amputation.

Whilst he was in bed, after the severity of the pain in his knee disappeared, the soles of his feet were the source of most of his pain. The bursa under the tendo-Achillis of the right foot was swollen and very painful. His left arm was swollen and painful, so that for two months he scarcely moved it at all.

At the end of three months he could barely hobble about with two sticks. He had no heart complications.

For three years the rheumatism remained chronic, and he was occasionally laid up for a day or two, his knee-joints being rarely if ever quite free from fluid. During all this time he had a persistent gleet.

1884.—Another bad attack supervened, which lasted two months, but he was not confined to his bed. His right foot became very painful indeed across the instep, and he was advised to wear a pad under his foot, which he did for three months, after which time he left it off; and when he first came under my care towards the end of the year, he was still suffering from a gleet which had never left him since his first attack.

June 1885.—Numerous attempts were made to get rid of the gleet by means of injections, catheters, &c., but no permanently good result was obtained; and having acquired another attack of gonorrhœa, the acuter form of the rheumatism again came on, and he spent some two or three weeks in bed.

At the commencement of this attack a careful examination was made of all the joints that had been previously affected, and the site of the previously-mentioned bursa under the tendo-Achillis was found to be occupied by a large periosteal node of bone; but it was not at all painful, nor did the soles of the feet hurt him during this attack. It was limited entirely to the knees, which had never perfectly recovered since the first attack.

After he recovered from the acuter symptoms and the rheumatism settled down again into its chronic condition, Mr. Savory saw him with me, and we agreed that he should take a voyage to the Cape, which he did, returning in October much in the same chronic condition.

In November 1885 the gleet remained in the same condition, and he asked me to make another attempt to cure it. After carefully examining the urethra with various bougies, in order to ascertain if there was any stricture which might have been previously overlooked, to account for the persistency of the gleet, I came upon a distinct sore place about two inches from the urethral orifice. Every time a *bougie à boule* was passed over it considerable pain was produced. I determined, therefore, to try the effect of a constant current upon the place, and passing down a metal-ended electrode bougie till it came in contact with the sore place, I allowed a current of six mille-ampères current strength to pass through the urethra for six minutes. The positive pole of the battery was placed over the sacrum. I saw him on December 17, about three weeks after the operation, and he said that he scarcely noticed any gleet.

January 8, 1886.—He reported himself as perfectly well, and he has remained so ever since.

March 9.—His knees are now perfectly well, except that there is distinct thickening at the lower ends of the condyles. There is no abnormal amount of fluid in the joints, nor do the synovial membranes display any signs of enlargement or thickening. He can walk ten miles with ease, which he has not been able to do since he had the rheumatism. The os calcis is thickened, exactly as it was in June 1885, when it was first noticed; it has undergone no change since. His right foot is decidedly flatter than the left; he cannot easily stand on tiptoe with it, and it causes him some pain if he stands on it alone, but in taking ordinary exercise t gives him no trouble whatever.

November 1886.—He still remains perfectly well, and has had no return of his gleet or rheumatism.

The above cases, it will be seen, comprise five instances of flat-foot, the origin of which can be distinctly traced to an attack of

gonorrhœa. The first three were temporary only in duration, and left the foot but slightly damaged, whilst the two latter cases presented examples of flat-foot of the most advanced kind. It is worthy, however, of remark, that the case of N. T., which presents so many points of interest, gives the clearest possible indication as to the line of treatment to be pursued. During his first attack in 1881, though the pain in his feet was very severe, he was in bed on account of the severity of the affection in his knees, and as he was not standing on his feet, no flat-foot resulted. In 1884 his knees were not so bad, nor were the feet; but he was able to be up and about, and so flat-foot ensued. Probably if rest were employed in such cases when the first symptom of flat-foot was exhibited, the rheumatism would be relieved and the progress of the foot-flattening arrested. A plaster of Paris splint would undoubtedly be sufficient for the purpose.

The case of E. L. is as nearly as possible parallel with those cases which are described by Davies-Colley, and have already been alluded to, so that it needs no further description at my hands. But the next case is, so far as I can ascertain, unique; for I cannot discover a case in which a joint affected with gonorrhœal rheumatism has been incised and drained. For purposes apparently of pathological investigation, joints have been punctured and their contents examined.[1] Laboulbène describes the fluid in such joints as alkaline, yellow, rapidly coagulative, and displaying pus under the microscope; and Haslund confirms these statements.

The outgrowths of bone occurred both in Case VII. and Case III. In the first case, their occurrence round about the elbow-joint, which had been the seat of suppuration, might readily be accounted for by the inflammation which had been there set up; but such an explanation would hardly apply to outgrowths about the condyles of the femur, which outgrowths were situated where no suppuration had occurred. They so closely resembled that condition which is characteristic of rheumatoid arthritis, that had it not been from their connection with an attack of gonorrhœal rheumatism, their relation to rheumatoid arthritis could hardly have been questioned; but they are all the more interesting when contrasted with a view that has been put forward by Hutchinson,[2] that rheumatoid arthritis often has its origin in an attack, or in repeated attacks, of gonorrhœal rheumatism. This view is apparently based on the history of this malady which is obtained from some patients in infirmaries, and it receives confirmation from the fact that on the Continent there is a well-recognised form

[1] Haslund, Pathogenesis of Gonorrhœal Rheumatism. *Med. Rec.*, 1885, p. 272, *et ibi cit.*

[2] Medical Press and Circular, 1880, July 7, p. 1.

of arthritis called "dysenteric arthritis," from its frequent occurrence in those who have been the victims of dysentery and similar intestinal irritations.

In Case III., the bony outgrowth on the os calcis at the insertion of the tendo-Achillis was first observed as a soft and painful swelling, and diagnosed by a good and careful observer as an enlarged bursa, which had become painful at the time of an attack of gonorrhœal rheumatism, whilst three years later it is discovered as a large well-marked painless bony outgrowth. Its syphilitic origin is put out of question by the fact that the patient had not had syphilis when I first noticed his outgrowth, but was under my care for that disease some few months later.

ON

MODIFICATIONS IN THE ACTION OF ACONITE

PRODUCED BY

CHANGES IN THE BODY TEMPERATURE.

BY

T. LAUDER BRUNTON, M.D., F.R.S.,

AND

J. THEODORE CASH, M.D.

The great objects of medical science are to prevent and cure disease. In attempting to cure his patients the physician is often baffled by the failure of his remedies to produce the desired effect, even when this effect is one which usually follows their administration in other cases apparently similar to the one he is treating. This failure may be due to a number of causes, all of which require careful investigation.

A. The cause of failure may be connected with the quantity or quality of the drugs. (1.) It may be that the dose is either too large or too small. In the following paper we shall endeavour to show that the dose is a factor of great importance in regard to the effect of a drug. (2.) The drug actually administered may not be the one intended, although it may bear the same name. Thus a case of poisoning occurred some time ago in consequence of aconitine having been prescribed, and a much more powerful kind than that intended having been dispensed.[1] Whilst we find such variations occurring in the effect of an active principle, in consequence of differences in the mode of preparation or in the species from which the active principle has been prepared, it is within the range of probability that we shall find differences in action between preparations containing all the active principles of a plant when this plant is not grown under fixed conditions of soil and temperature.

B. The two conditions already mentioned have reference to the

[1] Haakma Tresling and Busscher, Virchow's Jahresbericht, 1880, vol. i. p. 480.

drug itself, but there are others which refer to the organism on which the drug has to act. Two of the most important factors are (1.) the body temperature and (2.) bodily constitution. In a former paper entitled "Why do medicines sometimes fail to act?"[1] we showed that alterations in temperature have a great power to alter the effect of various drugs upon the body, and that these alterations are of great practical importance, inasmuch as the rise of temperature which occurs in fever may in some cases prevent the drugs from exerting upon the patient the action which they would do in a healthy person, and thus render them useless to a great extent.

This effect of high temperature upon the action of drugs is more especially important in the case of those remedies which are generally employed in febrile conditions. We have already shown in a former paper that the effect of digitalis upon the pulse rate is either greatly diminished or completely abolished when the body temperature rises above a certain point.[2]

Another drug which is very frequently used in febrile conditions is aconite, and it seemed to us, therefore, very important to ascertain whether its action is altered by the temperature of the animal's body at the time of its administration.

But, as we have already said, the constitution of the organism is also of very great importance, and it seemed advisable to investigate this factor as well as the temperature.

For some years we have been engaged in experiments for the purpose of ascertaining why drugs act differently on different organisms, or on the same organism at different times.[3] In these experiments we have had in view the facts that organisms differ—(A.) In their actual chemical composition; and, (B.) In the nature of their tissue change.

A. It has been shown by Lawes and Gilbert[4] that the percentage composition of the ashes of the entire bodies varies in different animals, the ash of pigs, for example, containing a lower percentage of lime and a higher percentage of potash and soda, as well as of phosphoric and sulphuric acids, than the ash of ruminants.

We have tried to alter the action of drugs on an animal by altering the proportion of different salts in its body, and we have succeeded in rendering animals more resistant to the action of barium by feeding them previously on potash. We have already pointed out some practical bearings of this research.

B. A still more promising field of inquiry seemed to us to be an investigation into the differences between the action of drugs upon

[1] Brunton and Cash, St. Bartholomew's Hospital Reports, vol. xx. p. 213.
[2] Brunton and Cash, Practitioner, October 1884, p. 272.
[3] Brunton and Cash, Philosophical Transactions, 1884, pt. i. p. 239.
[4] Lawes and Gilbert, Royal Society's Proceedings, 1883, p. 343.

animals in which the nature of tissue change is dissimilar, as indicated by differences in the nature of the excretory products—*e.g.*, urea and uric acid. We were especially attracted to this investigation by the hope that we might obtain a knowledge of the action of drugs on gouty subjects by ascertaining their action on birds or tortoises, in which the products of tissue waste are excreted as uric acid, and comparing it with their action on frogs and mammals, in which the waste is excreted in the form of urea.

From experiments on this subject we have already obtained some very interesting results, for we have found that morphine, which acts on mammals as a narcotic, and which, as Weir Mitchell observed, appears at first sight to have little action on birds, inasmuch as it produces no marked external symptoms, really exerts upon them a very remarkable action as an antipyretic, lowering the temperature in pigeons, in some instances, as much as several degrees centigrade.[1]

We had not intended to mention the practical bearing which we hoped that our researches might have on the treatment of gout until we had accumulated more facts, and we intended to content ourselves with a statement of our results; but Dr. Milner Fothergill has independently come to the idea that gout may be a reversion towards a primitive form of tissue nutrition.

In a paper read before the Medical Society of London[2] he defines the disease in the following words: "*Gout is hepatic reversion, the formation of a quantity of primitive urine products by a mammalian liver.*"

With such a crisp definition of gout as this before one, the practical object of our experiments on the action of opium on pigeons becomes self-evident. As opportunity offers, we intend to collect some observations on the effect of opium on gouty as compared with non-gouty persons, and on gouty patients during the paroxysm as compared with the intervals of the disease. We hope by this method to put the hypothesis to the proof, and to ascertain whether or not the gouty condition in man is really analogous to the normal process of nutrition in birds and reptiles.

We have not yet had time to take up the clinical part of this proposed investigation, and in the present paper we have only examined the action of aconite on pigeons and guinea-pigs, as representing birds and mammals. We shall confine ourselves to a consideration of the general antipyretic action of aconite without entering upon the effect it produces on pulse and blood-pressure.

[1] Brunton and Cash, Centralblatt d. med. Wiss., 1886, No. 14.

[2] Milner Fothergill, Proceedings of the Medical Society of London, vol. ix. p. 20.

Method.—The animals employed in any experiment were introduced, after their temperature had been ascertained, into an artificially cooled or heated chamber, as the case might be. For the cold chamber we employed a large copper vessel, the walls of which were covered internally with paper, in order that the animals might not come into direct contact with the metal. This vessel was placed in a tank containing ice alone or mixed with salt, according to the degree of cold which it was desired to produce. For heating we employed an incubator fitted with a Bunsen gas regulator, the walls of which were covered by stout cardboard, and the floor by two thicknesses of sacking. The door of the incubator remained half open, and in order that a renewal of the contained air might take place with regularity, the exhaust of a chemical pump was brought into connection with a tube which passed downwards through the centre of the chamber, and extended to within an inch from the floor.

The apparatus which we subsequently employed is represented in fig. 1. It served the double purpose of warming and cooling. It consisted of an external box (*a*), $7\frac{1}{2}$ inches in height, 13 inches long, by 12 inches broad, provided with efflux and influx tubes (*b*, *c*), and having flaps (*d*) which moved upwards or downwards upon hinges, so that in the latter position they rested upon the ledges of the inner box (*e*). This second chamber (7 inches deep, 10 inches long, by $8\frac{1}{2}$ inches broad) was intended to contain the animal under observation.

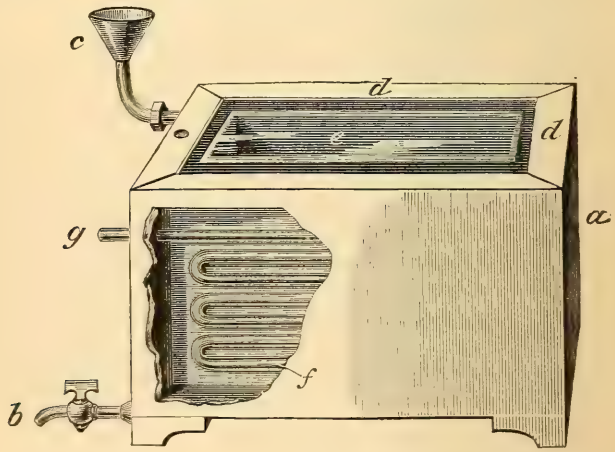


Fig. 1.

On one of its outer sides, a composition tube (*f*), shown through the broken wall of the outer box, was bent in a zigzag and secured

by solder. This tube opened upon the floor of the box, its purpose being to heat or cool the air admitted for the respiration of the animal, by bringing it into close contact with the ice or warm water lying between the two chambers. By its upper projecting extremity it was connected by a piece of india-rubber tubing with the spout, *g*, of the outer box. A ledge ran round the edges of the inner box, upon which a thick plate of glass, perforated for the admission of a thermometer, rested. This plate, when provided with an edging of india-rubber tubing, rendered the box practically air-tight. From the box itself the air was withdrawn by means of a tube passing through a second opening in the glass plate connected with an exhaust pipe; the admission of the cooled or heated air for respiration was thus assured, and its renewal was constantly taking place. The boxes were made of zinc.

The temperature of the animal was taken by means of a Cassella's finely graduated thermometer, having a moveable index. The temperature obtained in guinea-pigs is that of the rectum, and in pigeons is subalar. It is necessary in the case of birds that the thermometer should remain for at least ten minutes under the wing, which is brought into close contact with the breast by means of the left hand, while the right hand grasps the thermometer. The mercurial bulb must be kept accurately in the axilla for the time specified, otherwise too low a reading is obtained.

ACONITE.

ACTION OF ACONITE ON PIGEONS.

General Symptoms.—The general symptoms produced by moderate doses of aconite in pigeons are lethargy, slight shivering, with ruffling of the plumage and some fall of temperature. There is rather an absence of marked nervous symptoms, there being no jerking and no marked paralysis.

Large injections produce great dyspnœa. The fall of temperature is sometimes more distinct with small and medium than with large doses; the reason of this probably is that the dyspnœa produced hinders the fall of temperature which would otherwise have taken place.

The reduction of temperature is soon manifest after injection of aconite. It proceeds with some regularity for the first hour, then slackens; towards the end of the succeeding hour the temperature usually begins to rise again. The rise is gradual.

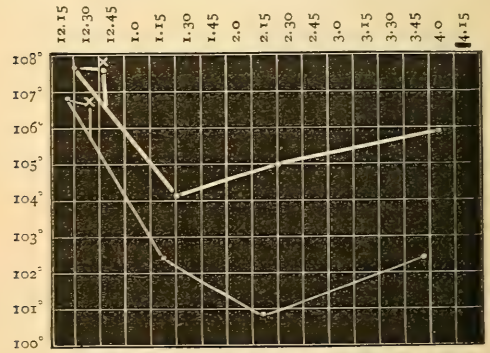
For a middle-sized pigeon, from 200 to 300 grammes in weight, a dose of five drops of tincture of aconite injected subcutaneously at one time appears to be invariably fatal. A dose of three drops is sometimes followed by death, usually occurring within half an

hour of the time of injection, but more frequently by recovery. When an interval is allowed to elapse before the administration of a second dose, the temperature having recovered from the effect of the first, the second fall which ensues is apparently in no way modified by the previous administration, and thus a dose which would have been fatal if given at one time produces no serious effect when divided.

The fall of temperature may be said roughly to bear a relationship to the extent of the dose administered, but by no means unfrequently it is found that a smaller dose may effect a greater reduction of temperature, or may ensure its longer continuance. Thus in the case of a pigeon weighing 318 grammes, which had received three drops of tincture of aconite, the fall of temperature amounted to 3.5° F., and in two hours it had risen considerably above its lowest point. On the other hand, a pigeon weighing 302 grammes, which had received two drops of the tincture showed a total fall of 6° F., with only a very faint indication of return towards the normal at the end of the second hour.

EXPERIMENT I.

Blue rock of 318 grms. Thick line. Received 3 gtt. tr. acon. Kept at room temp. 56° F.



Blue rock of 302 grms. Thin line. Received 2 gtt. tr. acon. Kept at room temp. 56° F.

Animal—Blue Rock Pigeon.
Weight, 318 grms.

Time, 12.30. Temp. = 107.7°.
,, 12.48. Inject. 3 gtt. tr. acon. in 1.5 c.c. salt sol. into muscles of breast.
,, 1.30. Temp. = 104.2°.
,, 2.30. Temp. = 105°.
,, 4.6. Throughout no abnormality; temp. 105.9°.

Animal—Blue Rock Pigeon.
Weight, 302 grms.

Time, 12.30. Temp. under wing = 106.8°.
,, 12.43. Inject. 2 gtt. tr. acon. in 1.5 c.c. salt sol.
,, 1.23. Temp. = 102.4°.
,, 2.22. Temp. = 100.8°. After taking for 10′ ceased to rise; looked drowsy, but excepting slight shiver, no special symptoms.
,, 3.57. Temp. = 102.4°. No abnormality.

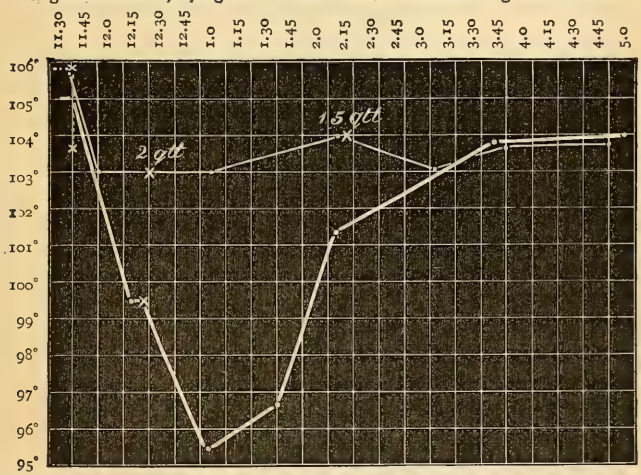
Action of Aconite and Cold upon Pigeons.—The fall of temperature produced in pigeons which are exposed for a considerable time in an atmosphere of from 5° to 6° C. generally amounts to from 2½° to 3° F. The effect of aconite is to increase this fall, so that the lowering of the temperature attributable to its action for 1½ to 2 drop doses usually amounts to about 2° F. We have, however, in the case of one or two birds, observed a much more marked reduction of temperature than this. In one experiment (March 9th) a bird weighing 277 grammes received one drop of the tincture of aconite subcutaneously. In eighty minutes its temperature had fallen from 105° to 95.4°, whilst that of the control bird had sunk through less than 3° F. On repeating this experiment the day but one following, on which occasion two drops of the tincture were injected, an even greater fall was observed in the case of the former bird, the reduction of its temperature being many degrees greater than that of a second pigeon which had received a larger dose of the drug.

We have hitherto been unable to associate this peculiar sensitiveness to the action of aconite with any variation in plumage or other peculiarity of the bird. We confined our observations entirely to "rock" pigeons, which had been bred together and reared under similar circumstances.

EXPERIMENT II.

Aconite on Cooled Pigeons.

Light blue rock, 272 grms. Thick line. Received 1 gtt. tr. acon.



Dark blue rock, 291 grms. Thin line. Received 2 gtt. tr. acon. and 1.5 gtt. tr. acon. in 1.5 c.c. salt solution.

The first × indicates the time when the birds were placed in the cooled chamber.

Animal—Light Blue Rock Pigeon.
Weight, 272 grms.
Temp. 105°.

Time, 11.45. Put both birds into zinc box surrounded by ice.
,, 12.20. Temp. = 99.45° (after taking for 12′ had quite ceased rising, and had even fallen a little).
,, 12.29. Inject. 1 gtt. tr. acon. in 1.5 c.c. salt sol. into pectoral muscles.
,, 12.55. Feathers rather ruffled; no tremor; breathes easily; is a little lethargic.
,, 1.7. Temp. in 12′ = 95.4°.
,, 1.45. Temp. = 96.6°. No abnormality.
,, 2.17. Temp. = 101.4°.
,, 3.52. Temp. = 103.8°. More ice; room cooler.
,, 5.15. Temp. = 104°.

Animal—Dark Blue Rock Pigeon.
Weight, 291 grms.
Temp. 105.8°.

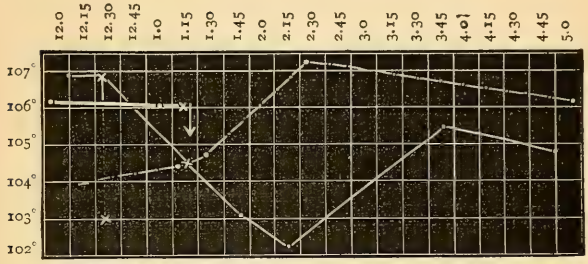
Time, 12.0. Temp. = 103°.
,, 12.30. Inject. 2 gtt. tr. acon. in 1.5. c.c. salt solution into pectoral muscles.
,, 1.12. Temp. = 103°. No abnormality.
,, 2.25. Temp. = 104°.
,, 2.27. Inject. again 1.5 gtt. tr. acon. in 1.5 c.c. salt sol.
,, 3.17. Temp. = 103°.
,, 4.0. Temp. = 103.7°.
,, 5.5. Temp. = 103.8°.

Action of Aconite and Heat on Pigeons.—The rise of temperature in normal pigeons introduced into a heated atmosphere seems, after a certain elevation has occurred, to run nearly parallel with the extent of dyspnœa which the bird manifests. It is thus unusual to find a marked elevation of the body temperature without at the same time recognising an evident increase and urgency of the respiratory movements of the animal. With the object of ascertaining the effect of aconite, we subjected birds to temperatures so high as to cause considerable dyspnœa (106° F.), and also to temperatures so much lower (100° F.) as to cause little or no dyspnœa, allowing always for the renewal of the air in the chamber by the exhaust pipe, or even dispensing with the glass cover of the box and allowing the bird to protrude its head and neck through a perforated cloth, and thus to breathe the air at about room temperature. In both instances it was demonstrated that aconite possessed the power not only of hindering the rise of body temperature, but of actually reducing it; whilst the control pigeon, under like circumstances, manifested a more or less extensive rise. The temperature, however, of the heated bird remained at its lowest level for a shorter period than in the pigeon exposed at moderate temperatures, and returned more abruptly to the normal or beyond it.

Experiment III.

Heat on Aconite (*Pigeons*).

Blue rock, 302 grms. Thick line. Received 3 gtt. tr. acon. Death.



Red rock, 229 grms. Thin line. Received 1 gtt. tr. acon.
Pink rock, 212 grms. (control). Dash and dot line.
Birds placed in incubator at dotted line.

Animal—Blue Rock Pigeon.
Weight, 302 grms.

Time.
12.5. Temp. = 106.2°.
12.35. Put all three birds in incubator at 25° C. and rising; wire gauze in front.
1.10. Temp. = 106°.
1.24. Inject. 3 gtt. tr. acon. in 1.5 c.c. salt sol. into breast muscles.
1.26. Almost at once violent fluttering; in 10″ there had been a few deep inspirations; bill widely opened; colour of beak and eyelids bluish. *Died.*
P.M.—Large firm clot in left heart; fluid blood in right heart.

Animal—Small Red Rock Pigeon.
Weight, 229 grms.
Temp. 107°.

Time.
1.19. Temp. = 104.5° (chamber 33° C.)
1.25. Inject. 1 gtt. tr. acon. in 1.5 c.c. salt sol. into muscles of breast.
1.44. Much shivering, as if cold.
1.55. Temp. = 103.1° (chamber 35° C.)
2.25. Less shivering (chamber 36° C.); temp. = 102.2°. Walks well; tries to fly.
3.50. Temp. = 105.5° (chamber 35° C.)
5.0. Temp. = 104° (chamber 35° C.) Quite normal.

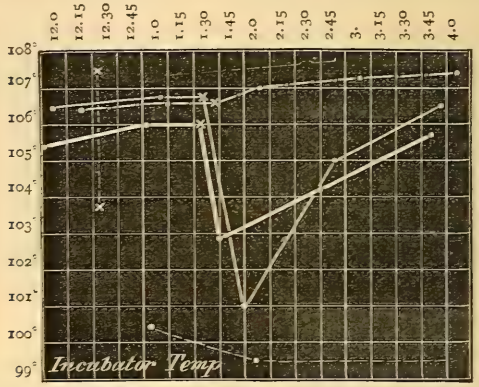
Animal—Small Pink Rock (control).
Weight, 212 grms.
Temp. 103.95°.

Time.
1.34. Temp. = 104.7°.
2.33. Temp. = 107.4°.
5.10. Temp. = 106.4°.

Experiment IV.

Aconite on Pigeons. Birds placed in Incubator.

Large blue rock of 272 grms. Thick line. Received 1 gtt. tr. acon.



Large blue rock of 291 grms. Thin line. Received 2 gtt. tr. acon. Small pink rock of 212 grms. (control). Dash and dot line. Received 1.5 c.c. salt. sol.

Animal—Large Blue Rock Pigeon.
Weight, 272 grms.

Time.
12.0. Temp. under wing = 105.4°.
12.35. Put all three into incubator at 33° C., and rising.
1.5. Temp. = 106°.
1.35. Inject. 1 gtt. tr. acon. in 1.5 c.c. salt sol. into breast muscles.
1.40. Tremor of wings; breathing rapid; body swayed with respiration.
1.45. Temp. = 102.9°.
2.45. Temp. = 104.2°. Is lively.
3.50. Temp. = 105.55°. Lively and normal.

Animal—Large Dark Blue Rock Pigeon.
Weight, 291 grms.
Temp. 106.4°.

Time.
1.13. Temp. = 106.55°.
1.36. Inject. 2 gtt. tr. acon. in 1.5 c.c. salt sol. into breast muscles.
1.40. Faint wing tremor.
2.0. Breathing very rapid, cannot be counted; walks well; no tremor. Temp. = 101° (in 10' ceased rising).
2.55. Temp. = 105°. Is rather torpid.
3.58. Temp. = 106.5°. Lively and normal.

Animal—Small Pink Rock Pigeon.
Weight, 212 grms.
Temp. 106.45°.

Time.
1.38. Temp. = 106.6°. Inject. 1.5 c.c. salt sol. into breast muscles.
2.8. Temp. = 107°.
3.8. Temp. = 107.3°.
4.5. Temp. = 107.4°.

With moderate doses the effect of the drug is usually in correspondence with the dose, two drops effecting a greater reduction than one; but with large doses the result is less regular, and we think that we have observed increased intolerance as the result of the elevated temperature. A repetition of the smaller dose, when the temperature has begun to rise, is succeeded by a fall, and subsequent elevation, which does not appear in any way influenced by the previous administration. In this, therefore, as from previously quoted observations, the inference seems justified that each dose of aconite produces its own appropriate effect without evidencing any accumulative action when the lowering of temperature pro-

duced by previous administration of the drug has given place to a distinct rise towards the normal.

ACTION OF ACONITE UPON GUINEA-PIGS.

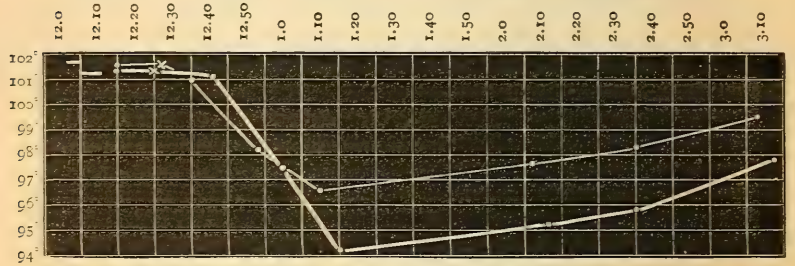
General Symptoms.—When a small dose (half a drop) of aconite is administered subcutaneously to a medium-sized guinea-pig (400–500 grammes), a slight shuddering of the body, as from cold, from time to time soon makes its appearance. The animal is lethargic, but exhibits no other prominent symptoms. With a larger dose (1½ to 3 drops), usually in from five to thirty minutes a distinct jerking or drawing together of the body, frequently accompanied with a movement apparently of retching, makes its appearance; at the same time the animal utters an occasional cry. Then a marked increase in the salivary secretion is observed, the saliva flowing freely from the mouth. There is also grinding of the teeth, and an evidently increasing paralysis, especially of the hind-limbs. If the dose is not lethal, after the continuation of these symptoms for a time, the salivation ceases, the startings and cry give place to an occasional jerk with slight tremor, and the affection of the limbs becoming less, the animal is again able to move about at will.

A dose of five drops of the tincture to a middle-sized guinea-pig is usually fatal in about half an hour. A dose of three drops to an animal of the same size produces the symptoms of powerful poisoning which we have already described, and may be succeeded by a fatal result. Accompanying these symptoms marked changes take place in the temperature of the animal. As the result of the administration of a medium dose (one drop) to a guinea-pig of 522 grammes (Exp. 5), the rectal temperature, which had stood at 101.6° F., fell in forty minutes after the injection to 98.2°, and in fifty-five minutes to 96.6°, after which time it again commenced to rise. It will be seen that the return towards the normal does not begin for a hundred minutes after the administration of the drug, and thereafter the rise is so gradual, as the result of the action of the aconite, that in three hours the temperature is still 2° below the normal. The rise of the temperature and the cessation of the motor and secretory symptoms are simultaneous. With a large dose (two to three drops) there is usually a fall of temperature; but, as was mentioned in the case of pigeons, it is not to be concluded that this fall is in all cases proportionate to the dose. Thus the same guinea-pig (of 522 grammes) whose temperature fell 4° after the administration of one drop of aconite, manifested a fall of 3.8° after an injection of three drops. The motor symptoms had developed themselves (jerking with vomiting movements) ten minutes after the injection, and an actual rise of temperature of ·8° was observed; nor did the temperature

fall to below the normal until these symptoms had abated. The continuance of the depression of temperature was, however, greater than in the case of the smaller dose. It is evident that the violent movements manifested in the case of severe poisoning may be causal to the maintenance or even elevation of the body temperature. It is safe to state that a reduction of temperature is most certainly obtained by the administration of a small dose (half drop to a middle-sized animal) rather than by a larger one.

EXPERIMENT V.

Guinea-pig of 522 grms. Thin line. 1.0 gtt. tr. acon. Room temp. 18.5° C.



Guinea-pig of 512 grms. Thick line. 0.5 gtt. tr. acon.

Animal—Guinea-pig.
Weight, 512 grms.

Time, 12.5. Rect. temp. = 101.5°.
,, 12.20. Inject. 5 gtt. tr. acon. in 2 c.c. salt sol.
,, 12.35. Temp. = 101°. No squealing.
,, 12.53. Temp. = 97.5° (fæces voided). (Basket containing animals was moved off bench over which there was a draught, and put within four feet of the fire.)
,, 1.10. Temp. = 94°. Is lethargic and shivers; no marked salivation.
,, 2.7. Temp. = 95.9°. Occasionally shudders; no salivation or spasm.
,, 2.30. Temp. = 95.9°. More active and normal.
,, 3.8. Temp. = 97.8°. Much more normal.

Animal—Guinea-pig.
Weight, 522 grms.

Time, 12.10. Rect. temp. = 101.6°.
,, 12.22. Inject. 1 gtt. tr. acon. in 2 c.c. salt sol.
,, 12.30. Temp. = 101° F. (No struggle). No squealing or salivation.
,, 12.50. Temp. = 98.2. Runs, but seems weak in hind-legs; occasional retching movement; slight salivation; occasionally grinding of teeth; starting.
,, 1.5. Temp. = 96.6°. Grinding teeth; no fresh abnormality.
,, 2.2. Temp. = 97.85°. Runs better; no squealing nor grinding of teeth.
,, 2.30. Temp. 98.4°. More normal.
,, 3.3. Temp. = 99.5°.

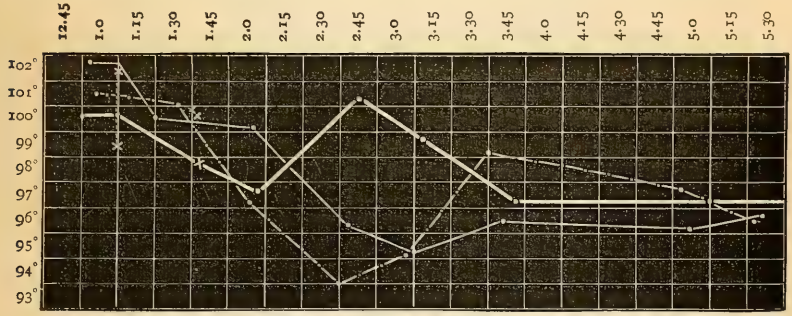
Action of Aconite and Cold on Guinea-Pig.—The lowering of temperature which occurs in a normal animal exposed in a cold atmosphere is markedly increased when aconite has been administered, and the effect is more lasting than in the case of the uncooled animal. It seems, also, as if the maximal lowering of temperature was delayed, so that it may be distinctly later than

in the case of the uncooled animal receiving a similar dose; whilst it is not to be forgotten that absorption is retarded by a low temperature. The fact that we are dealing here with time intervals of an hour and a half to two hours places this hypothesis out of the question. In cooled animals we have also noticed the effect, to which we have already drawn attention, that a smaller dose, whilst causing a more extensive fall of temperature than a larger one, may not exert its action for so long a time (Exp. 6).

Experiment VI.

Cold on Aconite (*Guinea-Pigs*).

Control, 512 grms. Thick line. Inject. 1.5 c.c. salt sol. Box temp. steady at 7° C.



Guinea-pig, 482 grms. Thick line. Received 1.5 gtt. tr. acon.
Guinea-pig, 522 grms. Dash and dot line. Received 1.0 gtt. tr. acon.
Put animals in at dotted line.

Animal—Guinea-pig.
Weight, 482 grms.
Temp. 101.8°.

Time.
1.0. Place all three in cold box at 7.6° C.
1.15. Temp. = 99.6°.
1.31. Inject. 1.5 gtt. tr. acon. B. P.
1.55. Temp. = 99.2°. Slightly exaggerated start or jerk on touching; runs well.
2.34. Temp. = 95.3°. Much paralysis of hind-limbs; grinds teeth; retching movements.
3.3. Temp. = 94.2°. Great grinding of teeth, more jerking, and now and then retching movements; much paralysis.
3.35. Temp. = 95.65.° A little stronger; no grinding of teeth, but little jerking.
4.55. Temp. = 93.2°. Much shivering; occasional jerk; no grinding of teeth or salivation.
5.25. Temp. = 95.7°. Still very weak, though stronger than before.

Animal—Guinea-pig.
Weight, 512 grms.
Temp. 99.7°.

Time.
1.34. Inject. 1.5 c.c. salt sol. as *control* experiment.
2.45. Temp. = 100.3°. Runs well; is not abnormal.
3.7. Temp. = 98.7°.
3.40. Temp. = 96.4° (rectum full of fæcal mass; temperature unreliable).
5.0. Temp. = 96.3°.
5.30. Temp. = 96.2°.

Animal—Guinea-pig.
Weight, 522 grms.
Temp. 100.4°.

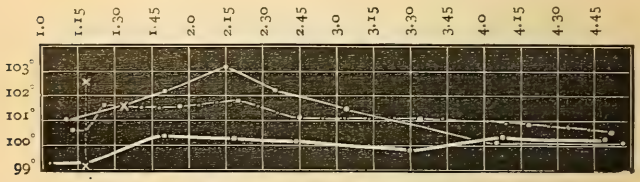
Time.
1.25. Temp. = 100°.
1.30. Inject. 1 gtt. tr. acon. in 1.5 c.c. salt sol.
1.50. Temp. = 96.2°. Runs well; no marked tremor.
2.30. Temp. 93°. Shifts position; jerks a little; grinds teeth.
2.58. Temp. = 94.1°. No grinding of teeth; tends to squeal and start.
3.30. Temp. = 98.2°. Jerking and squealing, but less than before; is better.
4.48. Temp. = 96.7. Slight retching movement from time to time when held.
5.30. Temp. = 95.6°. Rather stronger.

Action of Aconite and Heat on Guinea-Pigs.—Aconite exercises a marked effect upon the temperature of animals which has been raised above the normal. We have tested this action in two ways, both by administering the drug to animals which were still under the influence of an elevated temperature to which they had already been for some time exposed, and also by reduction of the surrounding temperature at the same time that the administration was made. In the first class of experiments (Exp. 7) it has been our experience that the resistance of the animal is but very little

EXPERIMENT VII.

Aconite on Guinea-pigs (*Warmed*). *Incubator*, 28.5°–30° C.

Control, 522 grms. Thick line.—Put all animals in incubator.



Guinea-pig, 512 grms. Thin line. Received 2 gtt. tr. acon.
Guinea-pig, 738 grms. Dash and dot line. Received 1 gtt. tr. acon.

Animal—Guinea-pig (control.)
Weight, 522 grms.
Rect. temp. 1.5° = 99.3°.
Put in hot incubator steady at from 28.5° to 29° C. throughout experiment.

Time.
1.50. Temp. = 100.4°.
2.17. Temp. = 100.4°.
2.40. Temp. = 100.3°.
3.30. Temp. = 99.8°.
4.11. Temp. = 100.4°.
4.48. Temp. = 100.2°.

Animal—Guinea-pig.
Weight, 512 grms.
Temp. 101°.

Time.
1.30. Temp. = 101.6°. Inject. 2 gtt. tr. acon. in salt sol. subcutaneously.
1.50. Temp. = 102.2°. Some jerking; considerable squealing,, but no grinding of teeth.
2.3. Occasional deep cry and grinding of teeth; salivation.
2.15. Temp. = 103.2°. Hind-limbs very weak; grinds teeth from time to time violently; lies long with legs out.
2.37. Temp. = 102.2°. More paralysed; no salivation; no jerking.
3.3. Temp. = 101.6° Breathing occasionally laboured; deep cry and grinding of teeth; hind-legs quite paralysed; moves on fore-legs.
4.7. Temp. = 100.2°. Moves better, but still much paralysed; reflex withdrawal of foot better; voluntary motion impaired.
4.5. Temp. = 100.1°. Power returning; more lively.

Animal—Guinea-pig.
Weight, 738 grms.
Temp. 100.6°.

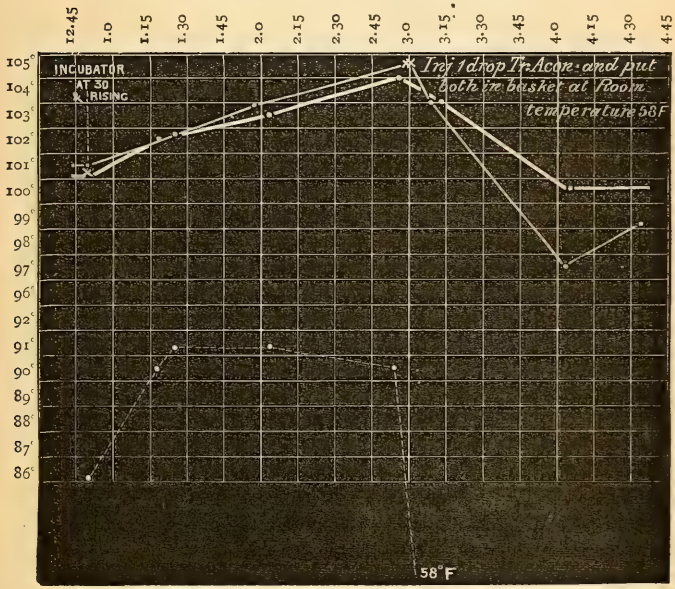
Time.
1.25. Temp. = 101.75°.
1.38. Inject. 1 gtt. tr. acon. in salt sol. subcutaneously.
1.57. Temp. = 101.6°. Will lie long with legs extended; after temperature taken in rect. no twitching or salivation.
2.20. Temp. = 101.8°. Extends legs; no salivation or twitching.
2.45. Temp. = 101°. Paralysis is well marked; no salivation, but a little tendency to retching.
3.33. Temp. = 101°. A good deal of paralysis, especially in hind-limbs.
4.18. Temp. 100.9°. Still very lethargic, though more use in hind-limbs than No. 2.
4.55. Temp. 100.5°. More normal.

increased by the action of the drug; in other words, that its temperature continues to rise equally to, or more than that of the control animal which has received no previous treatment. It frequently happened that the larger the dose of aconite administered the less was the resistance which the animal presented to a rise of body temperature when subjected to external heat. In the second class of experiments, however (Exp. 8), in which the source

EXPERIMENT VIII.

Aconite on Temperature Raised but not Maintained.

Guinea-pig, 400 grms. Thin line. Inject. 1 gtt. tr. acon.



Guinea-pig, 440 grms. Thick line. No injection.
Temperature of incubator. Dotted line.

Animal—Guinea-pig.
Weight, 440 grms.

Time, 12.45. Temp. = 100.1°.
,, 12.48. Put both animals in incubator at 31° C., temperature still rising.
,, 1.0. Temp. = 101.6°.
,, 1.30. Temp. = 101.8°.
,, 2.0. Temp. = 102.4°.
,, 2.30. Temp. = 103.3°.
,, 2.55. Temp. = 104°. Took out of incubator and exposed to room temperature.
,, 3.10. Temp. = 103°.
,, 3.45. Temp. = 101°.
,, 4.5. Temp. = 99.6°.
,, 4.40. Temp. = 99.6°.

Animal—Guinea-pig.
Weight, 400 grms.

Time, 12.40. Temp. = 100.6°.
,, 1.15. Temp. = 101.4°.
,, 1.45. Temp. = 102.4°.
,, 2.40. Temp. = 104°.
,, 3.0. Temp. = 104.5°. Injected 1 gtt. tr. acon. subcutan.
,, 3.15. Temp. = 102.4°.
,, 3.30. Temp. = 100.5°. Slight starting; no salivation.
,, 4.0. Temp. = 96.6°. Quiet, except for occasional start.
,, 4.35. Temp. = 98.3°. Runs well.

of heat was withdrawn and the animal was placed in a cooler atmosphere immediately after the administration of the drug, a more rapid and extensive fall of its temperature occurred than in the case of the control animal, which, with the exception of the injection, had been placed under similar circumstances. It is also to be noted that the antipyretic action of aconite makes itself obvious after the administration of a large dose when the motor symptoms are giving place to the paralytic condition.

Conclusions.

1. That in pigeons aconite acts as an antipyretic, both in large and in small doses.

2. This antipyretic action is exerted whether their body temperature be normal, or be artificially raised or artificially reduced at the time of the injection of the drug. In all cases the injection causes the temperature to fall.

3. This fall is usually less in birds which have been artificially cooled than in birds whose temperature is normal or has been raised artificially.

4. The action of the drug is apt to be modified by individual peculiarities in the birds which we are at present unable to explain.

5. The temperature returns more rapidly and completely towards the normal when the birds which have got aconite are kept in a warm place, although the primary fall induced by the administration of the drug may have been as great as, or greater than, that observed at medium temperatures.

6. A repetition of the dose after the effect of the first one has passed off causes a fall which is apparently uninfluenced by the first dose.

7. It is occasionally noticed that a large dose may cause a fall of temperature which is smaller but more prolonged than that caused by a smaller dose.

8. In guinea-pigs cooling appears to retard the fall of temperature caused by the drug, and also to retard the return to the normal.

9. The temperature of animals exposed to a heated atmosphere is but little affected by aconite ; in fact, large doses may diminish the resistance of the animal to the effect of external heat, and cause the temperature of an animal to rise higher than that of one to which no aconite has been given.

10. If the animal be exposed to cold when the drug is administered, the fall of temperature is both more rapid and more extensive than in the normal animal.

It is to be remembered that paralytic symptoms are readily produced in guinea-pigs by simple exposure to a high temperature without the administration of any drug.

Until we have obtained more experimental data we shall not attempt to explain the *modus operandi* of aconite. We shall at present content ourselves with drawing attention to one or two of the facts we have observed, and which may have a practical application.

Aconite appears to have a more constant antipyretic action on pigeons than on guinea-pigs. If gout be really a reversion to the type of nutrition which exists normally in birds and reptiles, aconite ought to be especially useful as an antipyretic in gouty subjects. The well-known action of colchicum in gout, and certain analogies which subsist between its action and that of aconite, render this action of aconite especially interesting. We purpose shortly to test the effect of colchicum in the same way as we have done that of aconite.

The second point of practical interest is that the antipyretic action of aconite is more marked and more certain when the animal (whether bird or mammal) is subjected to a low external temperature after the administration of the drug. This fact suggests the advisability of employing cold sponging or cold baths as an adjunct to aconite or of using aconite as an adjunct to them.

ON ABSORPTION OF GAS BY THE INTESTINES

AND THE

ACTION OF CARMINATIVES UPON IT.

BY

T. LAUDER BRUNTON, M.D., F.R.S.,

AND

J. THEODORE CASH, M.D.

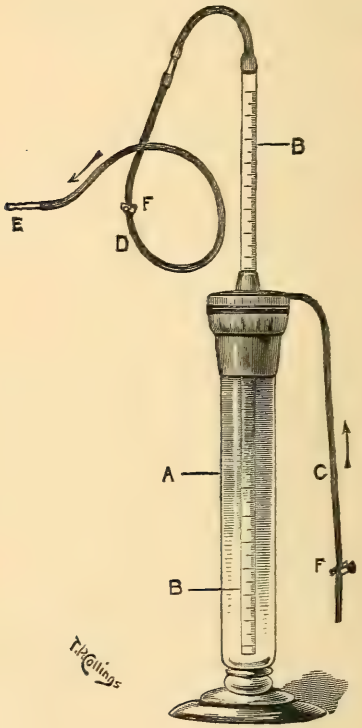
The experiments upon which this paper is based were performed six years ago. It was at that time our purpose to extend the investigation further, but another line of research having claimed our attention, we have been obliged to postpone the further study of gas absorption. It seemed advisable, therefore, to publish without further delay the results, incomplete though they be, at which we arrived, as they tend to throw some light upon an obscure subject.

The effect of carminatives in relieving flatulence is a well-known fact, but the *modus operandi* of these remedies has not yet been determined. It seemed probable that their action might depend to a great extent on increased peristaltic movements of the stomach and intestines, leading to the expulsion of gas; but the possibility of their causing increased absorption of gases from the intestines was a factor the value of which it seemed to us advisable to determine. For although the gaseous interchange which takes place between the blood and the gas or air, which is only separated from it by a thin layer of tissue, is no doubt much less in the intestine than in the lungs, yet it is probable that such an interchange does take place. In certain cases of heart-disease, and in the early stages of cirrhosis before ascites appears, the tendency to flatulence is greatly increased,

a fact which leads one to think that the distension occurring in these cases may be due to the diminished absorption of gas from the intestines consequent upon the obstruction of the flow of venous blood through the vessels. In order, then, to make out how far the absorption of gas from the intestines might be influenced by the action of carminatives, the experiments detailed in this paper were undertaken.

The essential parts of the apparatus employed were—

Fig. 1.



A. Outer cylinder containing water.
B. Burette for gas.
C. Pressure tube.
D. Exit tube for gas, with
E. Cannula.

(1.) A *gasometer* connected with generating and purifying bottles for the production of different gases. This gasometer had a cubic capacity of 300 centimeters.

(2.) A *discharge gasometer*, consisting of a finely graduated burette, partially immersed in a second glass chamber containing water, and closed at the top by a sheet of india-rubber, through which the burette passed, the opening being rendered air-tight by a ligature. By this means powerful positive or negative pressure could be produced at will in the inner chamber.

(3.) A system of *closed tubes* connecting the burette with the cannula, containing a glass stopcock (air-tight).

(4.) Wide-mouthed double-necked cannula, having a double constriction round the neck, in order that two ligatures might be applied to insure the connection of the tubes with the interior of the viscera being air-tight.

Fig. 2.



Glass cannula *in situ* (diagrammatic).

The principle of operation was thoroughly to anæsthetise the animal, at first with chloroform and then with æther; to perform tracheotomy and connect the tracheal cannula with an æther bottle provided with the regulating stop-cock recommended by Dr. Brunton; to expose the intestine by a mesial abdominal incision, and, after measuring out its length, to ligature, doubly below and triply above, two of the three upper ligatures embracing the cannula, the third obviating hæmorrhage from the division which had been entailed by the introduction of the cannula; to keep the exposed viscera in a warm steam-chamber connected with a glass flask containing warmed water; to maintain the general heat of the animal by keeping it carefully covered by cloths and cotton wadding. By observing these precautions the circulation was maintained in the mesentery exposed for an indefinite period. Before the introduction of the cannula all the intestinal contents were, by gentle pressure, removed from the part of the intestine experimented on.

Estimations were made half an hour after the injection of gas by returning the gaseous contents of the intestine into the burette *under suction*. By taking care that the part of the gut under examination distal from the cannula was first emptied, the exit of all contained gas was insured, and the cannula being then

closed, the gut remained empty until another injection was made a few minutes afterwards. The first three experiments are merely given in abstract in the schedules, as the method employed in them was less reliable than that which was afterwards adopted, and we are not inclined to attach much importance to the results. We had not at the time they were performed begun to employ the finely graduated apparatus we have just described in place of the less accurate instruments which we had recourse to at first. Another point of importance is, that in the first three experiments gas was removed by pressure, whilst in those following, suction only was used.

The amount of absorption which occurred in the first three experiments was enormously greater than in the later; and although we are not inclined altogether to accept their results on account of the imperfection of our apparatus, we think they are nevertheless deserving of some attention, and, had time and opportunity permitted, we should have repeated them with the more exact apparatus. The chief difference in the effect of pressure and of suction upon the intestine itself is that the latter simply removes the gas from the interior of the intestine without acting on the intestinal walls. Pressure, on the other hand, both removes the intestinal contents and acts as a powerful stimulus to the intestine affecting its muscular coats, the nervous plexuses contained in them, and the circulation in their blood-vessels. The stimulus of pressure causes increased peristalsis of the intestine, mechanically removes the blood from the venous radicals, and tends to cause dilatation of the arterioles. The circulation is thus accelerated in the intestine, and greater facility is thereby afforded for the absorption of any gas which it may contain.

The gases which we employed in these experiments were—

1. Atmospheric air.
2. Carbonic acid gas.[1]
3. Hydrogen.
4. Marsh gas (from sodium acetate and soda lime).
5. Coal gas (impure).
6. Sulphuretted hydrogen.

The carminatives used were oil of cloves (ol. caryophy. B.P.) and asafœtida. The experiments in which more than one gas was tested were commenced by the employment of either air, CO_2 or H, and were terminated by gases apt to prove injurious and disadvantageous to subsequent absorption by reason of their

[1] In the tables showing the estimation of CO_2, allowance has been made for the absorption of the gas by water during the process.

action upon the circulatory and respiratory systems, as marsh gas, coal gas, or sulphuretted hydrogen.

In each series of experiments the gases were tested in the first instance alone, and then again after the administration of the carminative.

We shall proceed to quote a few experiments in detail, but must refer for the others to the synopsis at the end of this paper.

Results in Detail of Subsequent Experiments.

EXPERIMENT IV.—Female Cat (middle-sized and healthy).

Gas.	Time.	Injected.	Time after.	Estimated.
Air .	11.5 11.7	Large int. 11 c.c. Small int. 8.8	Half an hour later	Large int. 10.5 c.c. Small int. 8.6 „
Air .	11.45 11.47	L.I. 8.3 c.c. S.I. 9 „	„ „	L.I. 8.3 c.c. S.I. 8.8 „
H .	12.25 12.27	L.I. 10 „ S.I. 10 „	„ „	L.I. 11.5 „ *a* S.I. 10 „
CO_2 .	1.15 1.17	L.I. 10.2 „ S.I. 10 „	„ „	L.I. 9.9 „ S.I. 9.4 „
Air+oil 2 gtt.	2.0 2.2	L.I. 10.2 „ S.I. 10.2 „	„ „	L.I. 9.8 „ S.I. 9.8 „
H+oil	2.45 2.47	L.I. 9.9 „ S.I. 10.2 „	„ „	L.I. 9.7 „ S.I. 10.2 „
H+oil	3.30 3.32	L.I. 10 „ S.I. 10 „	„ „	L.I. 9.9 „ S.I. 9.7 „
CO_2+oil	4.0 4.2	L.I. 10.3 „ S.I. 9.8 „	„ „	L.I. 9.8 „ S.I. 8.8 „

a This result is exceptional, but we could not perceive any cause of error in the experiment, and it would point to the possibility of secretion of gas by the intestinal mucous membrane. The gas removed was not analysed, so we are unable to state its composition.

Experiment V.

Cat (Healthy Female).

Operative proceeding as usual. Large intestine 6½ inches, from cæcum to descending colon. Small intestine 9 inches, at junction of jejunum and ileum.

Gas.	Time.	Injected.	Time after.	Estimated.
Atm. air.	11.13 ...	L.I. 10.4 c.c. S.I. 11.1 „	Half an hour later	10.3 c.c. 11.0 „
H	12.0 ...	L.I. 10.7 „ S.I. 10.2 „	„ „	10.7 „ 10.2 „
CO_2	12.50 ...	L.I. 12.0 „ S.I. 11.2 „	„ „	11.6 „ 10.6 „
CO_2 + ol. car. 2 gtt. + olive oil	1.45 ...	L.I. 11.3 „ S.I. 12.6 „	„ „	6.0 „ *a* 6.0 „
CO_2 + oil of last experiment still in intestine	2.23 ...	L.I. 10.2 „ S.I. 10.2 „	„ „	5.8 „ *b* 5.7 „
H. Oil not again injected	3.10 ...	L.I. 10.7 „ S.I. 9.7 „	„ „	10.4 „ *c* 9.2 „
Atm. air. Oil not again injected.	3.55 ...	L.I. 11.2 „ S.I. 7.4 „	„ „	11.4 „ 8.4 „

At end of experiment animal normal. Circulation in mesenteric vessels good. Peristalsis in ligatured intestine active.

Experiment XVII.

Cat (Healthy Female).

Operation as usual, but three intestinal regions taken, viz., large intestine (cæcum), 6.5 inches; two portions of the small intestine were isolated, viz., (1) ileum, 9 inches, and (2) duodenum and jejunum, 13 inches.

a Experiment having very marked result, repeated with every precaution against possibility of error.
b Much secretion had occurred.
c Great amount of secretion.

Gas.	Time.	Injected.	Time after.	Estimated.
Air . . .	12.15	L. I. 8.4 c.c. S. I_1 6.3 „ S. I_2 9.5 „	40′ „ „	8.1 c.c. 6.05 „ 9.35 „
CO_2 . . .	1.10	L. I. 9.2 „ S. I_1 5.2 „ S. I_2 10.2 „	„ „ „	4.6 „ 3.1 „ 6.4 „
Coal gas . .	2.5	L. I. 9.2 „ S. I_1 7.1 „ S. I_2 9.3 „	„ „ „	8.3 „ 6.9 „ 8.5 „
Air + 2 gtt. ol. car. and ol. ol. in each chamber .	3.0	L. I. 7.1 „ S. I_1 8.4 „ S. I_2 9.8 „	„ „ „	7.8 „ 8.8 „ 10.4 „ *a*
CO_2 + oil remaining . . .	3.55	L. I. 7.5 „ S. I_1 8.1 „ S. I_2 13.3 „	„ „ „	3.6 „ 4.5 „ 6.3 „ *b*
Coal gas . .	4.55	L. I. 7.9 „ S. I_1 7.4 „ S. I_2 9.9 „	„ „ „	8.3 „ 8.2 „ 10.3 „

Note.—Circulation was normally active at the end of observation; peristalsis occurred when the gut was distended.

Experiment II.

A variation was made in this experiment by injecting subcutaneously 30 grains chloral hydrate, and so obviating the necessity for the use of æther, which is by nature an antispasmodic. The experiment lasted between four and five hours. Asafœtida was also substituted for ol. caryoph., 2 grains of the substance emulsionised being injected into the lumen of the intestine itself. Sulphuretted hydrogen was collected and estimated over water saturated with the gas.

Large intestine 5 inches from cæcum; two portions of small intestine isolated for examination, 10 inches of ileum, 12 inches of jejunum.

Cat (Healthy Small Female).

Gas.	Time.	Injected.	Time after.	Estimated.
H_2S	12.5	L.I. 3.0 c.c. S.I_1 5.2 „	40′ „	2.2 c.c. 4.4 „
H_2S + asaf. 2 gtt. into L.I. and S.I_1. . .	1.5	L.I. 2.4 „ S.I_1 5.2 „	„ „	1.6 „ *d* 3.8 „
H_2S + asaf. remaining. .	2.0	L.I. 7.0 „ S.I_1 5.0 „	„ „	5.7 „ *e* 4.7 „

a Very strong peristalsis during this period. Intestine knotted on each side of an inflated portion.

b Great amount of secretion, except in L. I., made estimation difficult, though it was accomplished satisfactorily. Great peristalsis. Secretion easily dealt with.

c Peristalsis in interval very active.

d Respirations 20.

e Heart's impulse hardly perceptible.

Synopsis of Experiments—

Experiment.	Gas introduced. Intestine with or without Carminative.	Part and Length of Intestine.	Atmospheric Air. 12 per cent. absorbed.			
			Injected. †	Estimated.	Time.	Difference.
			c.c.	c.c.		
I.–III.	Small int. No C.* . . . ,, +Ol. caryoph. . .	Duodenum and ileum, 10 inches.				
IV.	Small int. No C. . . . ,, +Ol. caryoph. . .	Duodenum and ileum, 10 inches.	8.8	8.6	30′	− .2
			...	...	...	...
			10.2	9.8	30′	− .4
V.	Small int. No C. . . . ,, +Ol. caryoph. . .	...	11.1	11.0	30′	− .1
		...	7.4	8.4	30′	+1.0
VI.	No. 1. Small int. No C. . . ,, ,, +Ol. caryoph.	Ileum, 10 inches.	5.7	5.6	45′	− .1
			7.9	9.3	60′	+1.4
	No. 2. Small int. No C. . . ,, ,, +Ol. caryoph.	Jejunum and ileum, 10 inches.	6.7	6.7	...	= .0
			8.8	9.4	...	+ .6
VII.	No. 1. Small int. No C. . . ,, ,, +Ol. caryoph.	Ileum, 10 inches.	6.3	6.05	40′	− .25
			8.4	8.8	...	+ .4
	No. 2. Small int. No C. . . ,, ,, +Ol. caryoph.	Ileum and jejunum, 10 inches.	9.5	9.35	40′	− .15
			9.8	10.4	...	+ .6
VIII.	No. 1. Small int. No C. . . ,, ,, +Ol. caryoph.	Ileum, 12 inches.	12.7	13.2	45′	+ .5
			8.7	8.7	45′	= .0
	No. 2. Small int. No C. . . ,, ,, +Ol. caryoph.	Jejunum and duodenum, 12 inches.	13.1	12.2	...	− .9
			12.0	11.9	...	− .1
IX.	No. 1. Small int. No C. . . ,, ,, +Ol. caryoph.	Ileum, 12 inches.	5.9	5.8	45′	− .1
			9.8	10.6	...	+ .8
	No. 2. Small int. No C. . . ,, ,, +Ol. caryoph.	Jejunum and duodenum, 12 inches.	...	...	...	...
			...	...	...	...
X.	No. 1. Small int. No C. . . ,, ,, +Ol. caryoph.	Ileum, 12.5 inches.	...	...	...	...
			...	...	...	...
	No. 2. Small int. No C. . . ,, ,, +Ol. caryoph.	Jejunum and duodenum, 10 inches.	...	...	...	...
			...	...	...	...
XI.	Small int. No C. . . ,, +Asafœtida . .	Jejunum, 10 inches.	...	...	...	...
			...	...	...	...
XII.	Small int. No C. . . .	Jejunum, 8 inches.	8.0	8.5	40′	+ .5

* C. stands for carminative.
† The quantity of gas introduced is given in c.c.

—on Small Intestine.

Hydrogen.				Carbonic Acid Gas.				Coal Gas.				Carburetted Hydrogen.				Sulphuretted Hydrogen.			
8 per cent. absorbed.				12.5 per cent. absorbed.				... ...				... ...				... ...			
Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.
c.c.	c.c.			c.c.	c.c.			c.c.	c.c.			c.c.	c.c			c.c.	c.c.		
0.0	10.0	30′	=.0	10.0	9.4	30′	− .6	...	...	...	...	...	...	...	...	...	...	...	...
0.2	10.2	30′	=.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
0.0	9.7	30′	−.3	9.8	8.8	30′	−1.0	...	...	...	...	...	...	...	...	...	...	...	...
0.2	10.2	30′	=.0	11.2	10.6	30′	− .6	...	...	...	...	...	...	...	...	...	...	...	...
9.7	9.2	...	−.5	12.6	6.0	...	−6.6	...	...	...	...	...	...	...	...	...	...	...	...
				10.2	5.7	...	−4.5	...	...	...	...	...	...	...	...	...	...	...	...
9.0	8.8	60′	−.2	7.9	6.1	90′	−1.8	...	...	...	...	...	...	...	...	...	...	...	...
0.7	10.5	40′	−.2	7.4	6.6	60′	− .8	...	...	...	...	...	...	...	...	...	...	...	...
5.5	5.2	60′	−.3	6.3	4.8	90′	−1.5	...	...	...	...	...	...	...	...	...	...	...	...
8.2	8.0	40′	− 2	8.1	5.8	60′	−2.3	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	5.2	3.1	40′	−2.1	7.1	6.9	40′	−.2	...	...	...	...	...	...	...	...
...	...	...	...	8.1	4.5	40′	−3.6	7.4	8.2	40′	+.8	...	...	...	...	...	...	...	...
...	...	...	...	10.2	6.4	40′	−3.8	9.3	8.5	40′	−.8	...	...	...	...	...	...	...	...
...	...	...	...	13.3	6.3	40′	−7.0	9.9	10.3	...	+.4	...	...	...	...	...	...	...	...
...	...	...	...	9.7	7.3	45	−2.4	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	8.8	2.8	60′	−6.0	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	13.8	10.1	45′	−3.7	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	11.0	3.4	60′	−7.6	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	6.4	4.5	50′	−1.9	...	...	...	...	8.6	8.9	45′	+ .3	...	...	...	...
												6.1	6.2	50′	+ .1	...	...	...	...
...	...	...	...	8.2	5.0	35′	−3.2	...	...	...	...	7.4	7.4	50′	= .0	...	...	...	...
...	...	...	...	11.2	7.0	50′	−4.2	...	...	...	...	11.1	10.4	45′	− .7	...	...	...	...
												10.0	10.0	...	= .0	...	...	...	...
...	...	...	...	12.3	9.5	35′	−2.8*a*	...	...	...	...	11.1	11.1	...	= .0	...	...	...	...
...	...	...	...	8.2	5.0	60′	−3.2	...	...	...	...	9.1	7.6	60′	−1.5	...	...	...	...
...	...	...	...	10.4	6.3	...	−4.1	...	...	...	...	12.1	12.7	60′	+ .6	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	5.7	5.7	60′	= .0	...	...	...	...
...	...	...	...	5.4	4.4	10′	−1.0*b*	...	...	...	...	4.7	4.9	60′	+ .2	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.2	4.4	40′	− .8
...	...	...	...	...	...	...	... *c*	...	...	...	...	...	...	...	...	5.2	3.8	40′	−1.4
																5.0	4.7	40′	− .3
...	...	...	...	7.3	6.5	40″	− .8*d*	...	...	...	...	...	...	...	...	...	...	...	...*e*

a Much secretion vitiated result. *b* Animal died during this experiment.
c Circulation almost ceased as poisoning from H_2S occurred.
d Much greater absorption of CO_2 by large intestine in this instance.
e Animal died, apparently owing to great absorption of H_2S, which occurred from large intestine.

Synopsis of Experiments on—

Experiment.	Stomach or Large Intestine, with or without Carminative.	Length of Intestine.	Atmospheric Air.			
			Injected.	Estimated.	Time.	Difference.
			c.c.	c.c.		
I.–III.	Stomach. No C.	...	Usually no difference. Occasionally considerable disappearance. Result is, however, questionable.			
	,, + Ol. caryoph.	...				
IV.	Large int. No C.	6.0 inches	8.3	8.3	30′	=.0
	,, + Ol. caryoph.		11.0	10.5	30′	−.5
			10.2	9.8	30′	−.4
V.	Large int. No C.	6.5 inches	10.4	10.3	30′	−.1
	,, + Ol. caryoph.		11.2	11.4	30′	+.2
VI.	Large int. No C.	7.0 inches	3.9	3.8	45′	−.1
	,, + Ol. caryoph.		8.2	8.2	60′	=.0
VII.	Large int. No C.	6.5 inches	8.4	8.1	40′	−.3
	,, + Ol. caryoph.		7.1	7.8	40′	+.7
VIII.	Large int. No C.	7.0 inches	9.7	10.2	45′	+.5
	,, + Ol. caryoph. injected into stomach		8.0	8.0	45′	+.0
IX.	Large int. No C.	7.0 inches	8.5	8.6	45′	+.1
	,, + Ol. caryoph.		...	...	...	...
X.	Large int. No C.	6.0 inches	...	...	...	...
	,, + Ol. caryoph. injected into stomach		...	...	...	...
XI.	Large int. No C.	6.0 inches	...	...	...	...
	,, + Asafœtida		...	...	...	...
XII.	Large int. No C.	6.0 inches	8.0	8.0	40′	=.0
	,, + Asafœtida		...	...	...	...

—*Large Intestine and Stomach.*

Hydrogen.				Carbonic Acid Gas.				Coal Gas.				Carburetted Hydrogen.				Sulphuretted Hydrogen.			
...	...			Some decrease.				...	...			...	...			...	...		
...	...			Some decrease.				...	...			...	...			...	...		
				Estimation difficult.															
Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.	Injected.	Estimated.	Time.	Difference.
c.c.	c.c.			c.c.	c.c.			c.c.	c.c.			c.c.	c.c.			c.c.	c.c.		
10.0	11.5	30′	+1.5	10.2	9.9	30′	− .3	...	...	...	...	...	...	...	...	...	...	...	...
9.9	9.7	30′	− .2	10.3	9.8	30′	− .5	...	...	...	...	...	...	...	...	...	...	...	...
10.7	10.7	30′	= .0	11.3	6.0	30′	−5.3	...	...	...	...	...	...	...	...	...	...	...	...
10.7	10.4	30′	− .3	10.2	5.8	30′	−4.4	...	...	...	...	...	...	...	...	...	...	...	...
3.7	3.5	45′	− .2	6.7	4.6	90′	−2.4*a*	...	...	...	...	...	...	...	...	...	...	...	...
8.9	7.4	40′	−1.5	7.3	5.7	60′	−1.6	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	9.2	4.6	40′	−4.6*b*	9.2	8.3	40′	−.9	...	...	...	...	...	...	...	...
...	...	...	...	7.5	3.6	40′	−3.9	7.9	8.3	40′	×.4	...	...	...	...	...	...	...	...
...	...	...	...	7.4	5.8	45′	−1.6	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	8.1	2.0	60′	−6.1	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	6.3	4.7	50′	−1.6*c*	...	...	...		6.9	7.1	45′	+.2	...	...	...	...
				9.5	6.3	35′	−3.2					7.15	7.15	45′	=.0	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	9.2	9.3	50′	+.1	...	...	...	...
...	...	...	...	8.0	4.0	40′	−4.0	...	...	...	...	6.5	6.5	60′	=.0	...	...	...	...
...	...	...	...	9.5	8.6	40′	− .9*d*	...	...	...	...	6.8	7.6	60′	+.8	...	...	...	...
...	...	...	...	3.7	3.3	40′	− .4*e*	...	...	...	...	...	...	...	...	3.0	2.2	40′	− .8*f*
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.4	1.6	40′	− .8
																7.0	5.7	40′	−1.3
...	...	...	...	6.4	3.9	40′	−2.5	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	9.0	6.0	60′	−3.0	...	...	...	...	...	...	...	...	...	...	...	...

a Extensive secretion which occurred in this case may account for irregular result.
b Ibid.
c Both with ol. caryoph.; more added before second estimation.
d Cat died during this estimation.
e Cat died apparently from absorption of H_2S.
f The cat moribund from H_2S.

Brief Statement of Results.

Atmospheric Air.—*Small Intestine.*—The results were negative, but little if any absorption occurring before the carminative, and no apparent increase in absorption after its use.

The same may be said of the large intestine.

Reckoning Experiments iv., v., vi., vii., and ix. on the small intestine, the disappearance without carminatives was 1.6 per cent., whilst with them there was a slight increase in the volume of gas returned (estimated at room temperature) as contrasted with the total introduced.

Hydrogen.—*Small Intestine.*—Before carminatives (four estimations) disappearance averaged 1.5 per cent.

After carminatives (ol. caryophylli) disappearance averaged in four experiments 3.1 per cent.

Large Intestine (three estimations).—In one case a considerable increase in the gas returned was noted, 1.5 c.c. In the other two an equal return or a slight disappearance took place.

After ol. caryophylli there was in two cases a slight diminution of volume, and in the third (Experiment vi.) a very considerable reduction.

Carbonic Acid Gas.—We have already stated that approximate allowance has been made in the figures given for absorption of carbonic acid gas during estimation.

Small Intestine.—Experiments iv. to ix., inclusive of the first half of No. x., yield eleven estimations for the absorption of carbonic acid gas, and twelve for its absorption after the action of carminatives; ol. caryophylli being in each case employed.

In all cases a marked disappearance was recorded before the action of ol. caryophylli; this disappearance amounted to no less than 26 per cent. of the total injected.

After the employment of carminatives (oil of cloves), an average disappearance of 41 per cent. was recorded. It is necessary here to draw attention to the fact that after a large proportion of the injection of oil of cloves in emulsion very abundant secretion resulted, and this secretion may have been in part answerable for the disappearance of this gas.

Large Intestine.—From an examination of seven experiments without and seven with oil of cloves, we obtained an average percentage reduction of the volume of the returned gas amounting to 32.4 in the former and 35.9 for the latter, a difference which does not run by any means parallel with the estimations made with the small intestine.

Coal Gas.—We were not able to satisfy ourselves that any

disappearance took place in the volume of coal gas admitted to the small or large intestine after the administration of clove oil; on the contrary, as estimated at room temperature, a slight increase in volume was noted, in place of the trifling disappearance which seemed to occur before the carminative.

Carburetted Hydrogen.—Small Intestine.— Six estimations were made before oil of cloves, and four after it. The former yielded 3.7 per cent., a disappearance somewhat beyond the limits of probable error, whilst the latter gave an increase of 2.2 per cent. on the total injected. The large intestine gave a somewhat parallel result.

Sulphuretted Hydrogen disappears to a large extent; its estimation was made over saturated water. In two instances we have seen animals die after its introduction into the intestine, one of these being distinctly convulsed.

Asafœtida was the carminative employed in the Experiment xii. in the schedule. It had no marked effect in increasing absorption before its second administration. More than 15 per cent. of the gas disappeared in the course of forty minutes.

Conclusion.

When atmospheric air, hydrogen, coal gas, and carburetted hydrogen were injected into the intestine, little or no absorption occurred in our experiments, and the addition of carminatives did not appear to increase absorption; on the contrary, in some experiments a slight increase in the volume of the returned gas occurred. As no analysis of the returned gas was made, we cannot state positively what the cause of this increase may have been.

In the case of carbonic acid gas and sulphuretted hydrogen the results were very different, and a considerable amount of the gas injected into the intestine disappeared. As both these gases are very soluble in water and in alkaline solutions, this disappearance may have been partly due to solution of the gas in the intestinal secretion, but in the case of sulphuretted hydrogen the symptoms of poisoning which accompanied its disappearance showed that it had undergone absorption into the circulation, and we may fairly conclude that disappearance of carbonic acid was chiefly due to absorption likewise. The effect of carminatives appeared to be to increase the amount of carbonic acid gas absorbed, but not that of sulphuretted hydrogen. As the amount of secretion caused by the introduction of oil of cloves was great, the fact that the disappearance may have been

owing to a solution, and not entirely to a physiological absorption, is not to be lost sight of. Whatever the explanation may be, the increase of secretion indicates that advantage is to be gained from the prescription of carminatives together with purgatives in everyday practice.

The rapid absorption of sulphuretted hydrogen in the intestine —so rapid as to give rise to fatal poisoning—is very interesting from a clinical point of view, inasmuch as this is one of the gases occasionally formed from the intestine in cases of disordered digestion. After its absorption the gas is carried by the blood to the lungs, and is there eliminated so rapidly, that unless the venous blood be very lightly charged with it, almost the whole of it escapes in the breath, and too little of it reaches the nerve centres and the systemic circulation generally to produce any toxic symptoms.[1] Indeed, Claude Bernard states that although sulphuretted hydrogen kills animals rapidly when absorbed by the lungs, yet it may be introduced with impunity into the veins, the subcutaneous cellular tissue, and the intestinal canal, and that no malaise is observed in the animal experimented upon.

But this can only be true when the quantity injected is small, for Orfila[2] observed that both gaseous sulphuretted hydrogen and a solution of it in water when injected into the large intestines of rabbits and horses caused the death of these animals in less than a minute. Although sulphuretted hydrogen is frequently found in the intestine in cases of dyspepsia, as is evidenced by the taste of rotten eggs of which the patient complains, or even by the odour of the eructations, yet the quantity formed is rarely sufficient to produce serious symptoms. Occasionally, however, such a rapid and extensive formation occurs that the whole of the quantity absorbed by the intestine cannot be eliminated from the lungs, and serious, or even approaching fatal, poisoning may ensue. We have found three cases of this sort on record. In one of them, described by Senator,[3] the symptoms consisted in giddiness and collapse; and in another case, mentioned by Betts, in which the sulphuretted hydrogen appears to have been mixed with acetone and ammonia, the pulse and respiration were both rapid, the face red, and the patient insensible and delirious.

In conclusion, we may shortly recapitulate the chief results of this paper by saying that we have found little or no absorption of gas from the intestine except in the case of carbonic acid

[1] Léçons de Pathologie experimentale, 439.
[2] On Poisons. Waller's translation, 2nd edit., vol. ii. p. 376.
[3] Senator, Berlin. klin. Wochensch., 1868, No. 24.

and sulphuretted hydrogen. Carminatives did not appear to accelerate absorption except in the case of carbonic acid. The utility of carminatives in flatulence appears to be rather due to their effect upon the movements of the intestine than to their causing an increased absorption of gas from it. The carminative chiefly used in our experiments, oil of cloves, caused a marked increase in the secretion of the intestine, and this action may be one of the factors in the utility of carminatives as an adjunct to purgatives.

The fact that sulphuretted hydrogen may be absorbed from the intestine so rapidly as to produce fatal poisoning, indicates the necessity for care in its administration per rectum in the way recently suggested as a cure for phthisis.

OPHTHALMIC NOTES AND CASES.

BY

WALTER H. JESSOP, M.B.

Notes on the Uses of Cocaine in Ophthalmic Practice.

I thought it would be useful to publish the following notes on the uses of cocaine in ophthalmic practice, as they are the experience of a two years' constant use of the drug in my own practice. More detailed accounts of some of the points raised will be found in my earlier papers on the drug.[1] It may be as well to briefly recapitulate first the physiological action of the drug on the eye. Cocaine induces local anæsthesia, mydriasis, constriction of the small arterioles, paresis or palsy of the accommodation, slight diminution of intraocular tension, enlargement of the palpebral fissure, flaccidity of the cornea, slight proptosis.

The hydrochlorate of cocaine is the salt I always use, either made up in 2 to 4 per cent. aqueous solution, in $\frac{1}{200}$ gr. disks, or as a 4 per cent. ointment with lanoline. The latter is the best if dense structures, as the skin, have to be dealt with, and requires careful rubbing in with a spatula. After superficial anæsthesia has been induced, a hypodermic injection of solution of cocaine will render analgesic the deeper structures if required. The fault of the solutions is the difficulty of keeping them. My own are made up with boracic lotion or camphor water, but I always use a freshly-made solution for operations involving the deeper structures of the eye. Although using the disks a great deal, I have never seen any bad effect from them, and they are excessively convenient.

It is advisable in most cases to apply cocaine to both eyes, even if only one is to be operated on; this is to avoid the great straining induced by the difference of sensibility in the two eyes.

[1] The Practitioner, 1885, p. 1; Transactions of the Ophthalmological Society, vol. v. p. 240; Proceedings of the Royal Society, vol. xxxviii. p. 432, and vol. xl. 1886, p. 481.

If only one eye is to be operated on, it is better also to bandage up the other during the operation, if the patient can see with it. Great care must be paid to the application of a bandage after an operation, owing to the anæsthetic condition of the eye; and if the eye is not bandaged up, some oleaginous compound should be put in it to prevent the cornea being exposed to external influences.

The greatest use of cocaine is to induce local anæsthesia, and as far as the ordinary production of this, little can be added to Koller's original statements. I have done every ordinary ophthalmic operation under its influence, and now use no other anæsthetic except in cases of excision of the eye, sometimes in a case of tenotomy, and in nervous children. As a rule, the anæsthesia is easily produced, but sometimes the drug has little effect, as in glaucoma, owing, I think, to the increased tension, and in some cases without apparently any reason.

The iris is the most difficult part of the eye to completely anæsthetise, and in the operation of iridectomy, except in cases of glaucoma, I now pull the iris out with a Tyrrell's hook instead of seizing it with a pair of forceps, and have found the pain much lessened thereby.

Certain difficulties are met with in operating on an eye under cocaine. The most important is due to the relaxed condition of the tissues of the eye, and nowhere is this better seen than in the trouble sometimes experienced in extracting the lens, and especially in removing any soft matter left behind; in such cases as the latter, the injection methods, as Mackeown's, are especially useful. In three cases of senile cataract extraction I have seen the cornea after the operation become quite concave, but happily without any bad result afterwards.

Another trouble occurs occasionally in cases where atropine has been used or the pupil much dilated by cocaine, and is due to the action of cocaine on the iris. In the normal or atropised eye, when the aqueous is let out the pupil contracts, but in the cocainised eye it remains dilated, and this may produce prolapse of the iris, or great difficulty in seizing hold of the iris. To avoid this, I use a 2 per cent. mixture of pilocarpine and cocaine in the proportion of 1 to 4, which keeps the pupil the normal size. In glaucoma the best way is to contract the pupil as much as possible by eserine first, and then use cocaine as usual.

As to its dangers as an anæsthetic, I have never seen any bad results, either constitutional or local, though they have been described by others. The cornea often becomes steamy and dry if much exposed, but this has always disappeared in my cases by the next day. About a year ago, when I was using mercuric solu-

tions to wash the eye with before operating, I noticed the cornea often become white, but found this was due to a precipitate thrown down by the cocaine.

The anæsthetic properties of cocaine are also of great use in the treatment of photophobia, corneal ulcer, &c., and the drug may be used either by itself or in combination with other remedies.

In slight cases of ptosis I have seen marked benefit, due to the enlargement of the palpebral fissure by cocaine.

The action of cocaine on the intraocular muscles is to produce dilatation of each, in the one case inducing mydriasis, and in the other paresis or palsy of the accommodation. This mydriatic action is very useful for ophthalmoscopic work, as though the pupil acts to light and accommodation, it is very large, and the accompanying action on the ciliary muscle does not last so long as in homatropine and atropine. For refraction I have used cocaine a great deal, and in many cases have found it very convenient; but unfortunately it is not to be relied on owing to the fleeting nature of its action on the ciliary muscle; and in hospital practice, if the patients have to wait long, it is useless. The combination of 2 per cent. solution of homatropine and cocaine I have found very useful for refraction purposes, and after four applications the accommodation is generally paralysed. There is, however, a slight uncertainty in its action; in two cases of spasm of accommodation and apparent myopia I applied the mixture of homatropine and cocaine, with the result that hypermetropic astigmatism in the one case and mixed astigmatism in the other were found. Not being satisfied, I ordered atropine for three days, and in each case the result was simple hypermetropia. I have little doubt that in these cases the drug had been limited in its action, and had affected only part of the muscle, as happens sometimes with the pupil.

The combination of cocaine and atropine is to produce a greater mydriasis than atropine alone, and in a much shorter time. This makes it very useful in cases of iritis,[1] as there is also the advantage of the analgesic action of the drug.

The diminution of tension produced by cocaine at first suggested it would be a safer mydriatic than homatropine, but one case of glaucoma has been recorded by Manz after its use, though I confess, from reading the notes of the case, it is somewhat doubtful. However, in my own practice I have seen a case of glaucoma produced by the mixture of cocaine and atropine, in which there was not the least doubt of the cause. This certainly might be expected from the fact that the excessive mydriasis would block up the iridic angle.

[1] Lancet, October 10, 1885, p. 659.

Contraction of the Field of Vision in Diphtheria.

In the last volume of the Transactions of the Ophthalmological Society, on page 386, will be found the notes and fields of a case of diphtheria exhibiting marked contraction of the fields of vision. This is, I think, the first recorded case, but since then I have seen three similar ones; they all showed nearly regular contraction of the field, and were associated with paresis or palsy of the ciliary muscle. I tried them all with a light blue glass, but this did not increase the field, as it often does in hysterical amblyopia. The fields also did not exhibit a spiral curve, as Priestley Smith[1] showed often occurred in neurasthenic amblyopia. The contraction in my cases disappeared under tonics at the same time as the palsy of accommodation. In one case I thought the retinal arteries were distinctly small at the time of greatest contraction of the field.

Case of Insular Sclerosis, commencing with Diplopia and Optic Nerve Atrophy.

William M., aged 21, came to the Central London Ophthalmic Hospital first on January 9, 1883, complaining of double vision and a mist before his eyes for three weeks. He had always very good sight before, and never anything the matter with his eyes; no history or signs of syphilis, rheumatism, ague, or phthisis; has had a great deal of worry lately. Eight years ago he fell from an altar, hitting his head, and was unconscious for two hours; two years ago fell off the top of an omnibus and hurt his back, and was unconscious afterwards for three hours. Is a very temperate man, and smokes only a little.

Family history:—He has nine brothers and sisters living, and all are healthy. Mother suffers from rheumatism; her father rheumatic, and her grandfather gouty.

He looks a healthy though nervous man; there is inability to move the left eye completely out; and on taking his fields there is homonymous diplopia, most marked to the left. Ophthalm.—left eye, a slight crescent below the disk, otherwise both eyes normal.

Vision—Each eye $\frac{20}{20}$ J. i. at 8″; knee-jerks normal; ordered liq. hydr. perchlor. ℥ss. three times a day.

On March 5, says he only sees double if out in a wind; tried for diplopia, but not found; has binocular vision; complains of pain in left side of head; vision the same, but mist before eyes occasionally.

[1] Reflex Amblyopia, Ophth. Review, vol. iii. p. 141

I did not see him again till October 13, 1885, when he said that he had been quite well till three weeks ago, but at that time had a return of diplopia, and found that his right eye was defective for the first time. Vision—right eye, $\frac{2}{60}$, J. xvi. at 22 cm.; left eye, $\frac{6}{6}$ J. i. at 22 cm. Ophthalm.: Right eye—optic disk atrophied, white, bluish grey below, filled up in centre, edges fairly well defined, arteries small; above and to inner side of disk is a small spot of black pigment, with thinning of choroid around it. Left eye—disk paler than normal, white scleral ring round its periphery, moderately deep physiological cup. Pupils equal; act well to accommodation; right does not act so well to direct light as left. Fields of vision taken with a white disk of 10 mm. diameter, and both are very contracted; the right is within the 10 circle, the left very little larger. Colour vision—left eye, normal; right eye, he confuses light yellows and greens.

Oct. 27.—Has monocular diplopia with the left eye; the images are upright, same level, and about half an inch apart all over the field. Vision—right eye, $\frac{6}{36}$ J. 16 at 14 cm.

Nov. 3.—Still monocular diplopia with left eye; no central scotoma; does not smoke now, as he gave it up six months ago. Urine, 1012; acid; no albumen; no sugar.

Nov. 17.—No diplopia to be found; he says that it disappeared ten days ago. Ophthalm.: left eye—disk blueish grey; retinal arteries small; vision, $\frac{6}{6}$ partly.

Nov. 24.—For three days has noticed that mist before right eye has been thicker, sometimes a rainbow of colours, chiefly red and blue, and at times cannot even see his own hand. Excessive pain occasionally at back of eyes, and often stitch in left side; has never had feelings of nausea or sickness. Knee-jerks—left, very slight; right, normal. Vision—right eye, $\frac{6}{60}$, J. xx. at 22 cm.; left, $\frac{6}{9}$ partly. Ordered tr. nucis vomicæ ℥vii.ss. three times a day.

Dec. 8.—Great improvement in sight of right eye, but cannot look for long at an object, as mist comes over it. Ophthalm.—disks and vessels the same. Vision—right eye, $\frac{6}{12}$, J. 4 at 22 cm. Fields of vision the same.

Dec. 15.—Complains of left leg giving way under him after walking some distance; foot feels as if weighted with lead. Great pains round abdomen three days ago, and every morning since. Pupils equal, act well to accommodation, but right acts slowly to light. Knee-jerks—left, absent; right, normal.

Jan. 5, 1886.—Says vision worse in the cold and out of doors; no pains about the body; diplopia very much at night, and the first thing in the morning; no nystagmus. Vision—right eye, $\frac{6}{24}$, J. 12 at 22 cm.

Feb. 2.—For two weeks had great pain round stomach and slight stoppage of urine. Vision—right eye, $\frac{6}{0}$, J. xx. at 18 cm.; left eye, $\frac{6}{6}$, J. i. at 22 cm.

The next time I saw him was on November 18, 1886, when he had well-marked symptoms of disseminated sclerosis. He had been well till June, when he began to lose power over his legs. He was admitted into University College Hospital under Dr. Gowers in September, and is now under his care. The eye symptoms now are atrophy of both disks; the pupils still act to light and accommodation, and right is larger than left. Vision—right eye, counts fingers held close to eye; left eye, $\frac{6}{18}$.

The occurrence of optic nerve atrophy in connection with disseminated sclerosis is very rare, and Dr. Gowers tells me that he has only seen four cases in his great experience of nervous diseases. From that standpoint alone this case would be worth recording, but the absence of the ordinary symptoms of the disease for so long, and the incipient signs being ocular, make it, I think, unique.

The usual eye complication, nystagmus, was absent all through, and with the exception of the pupils, the ocular signs pointed to the commencement of an attack of locomotor ataxia. The atrophy of the disks was accompanied with small retinal arteries and very contracted fields of vision. Though these symptoms were present in both eyes, the sight of the left remained good; and it is worth noticing the alterations in vision of the right eye from November 24, 1885, to February 2, 1886, though no difference was discernible in the optic disk, retinal arteries, or fields of vision. Excepting, therefore, his age and his pupils, there was nothing to point to insular sclerosis till he saw Dr. Gowers in September 1886, two years and nine months after the onset of his first symptoms.

Rupture of the Eyeball through the Sclerotic—The Wound Stitched up—Recovery with Perfect Vision.

The following case is interesting as showing the quick and good recovery which takes place sometimes after a bad rupture of the eye. In this case also good result followed, notwithstanding the vitreous was probed about with the electro-magnet in search of a foreign body. The history was so vague and the media so hazy that the presence or absence of a piece of iron could not have been satisfactorily ascertained without the magnet. The great desideratum in such cases is, I am sure, early and prompt treatment. I saw a few days ago a case in which I stitched up the sclerotic for rupture in 1884; at the present time one cannot see from the

outside the site of the wound, and the vision and ophthalmoscopic signs have remained the same as recorded.[1]

Thomas S., aged 30 years, came to the Central London Ophthalmic Hospital on October 30, 1886, at 7.30 P.M., and was seen by me an hour afterwards. He said that whilst hammering a nail into a loose board something sprung back and hit him in the right eye, but he did not know whether it was the hammer or the nail.

Right eye—there is a horizontal wound through the conjunctiva and the sclerotic with vitreous exuding. It is about 8 mm. long, and 3 mm. below the ciliary region. Pupil oval, being drawn towards the wound, and the lens uninjured. Vitreous hazy, but no foreign body to be seen. Retinal vessels indistinctly seen, but details of disk not to be made out. Vision—sees large objects, but cannot count fingers; projection good. Tension, −3.

Under cocaine I passed twice into the wound Snell's electromagnet, and moved it about rather freely in the vitreous in search of a foreign body, but found nothing. The vitreous protruding from the wound was then snipped off, and a fine silk suture passed through the sclerotic, bringing the edges of the wound together. The eye being washed well with boracic lotion, a cold compress was put on, and he was ordered to have it frequently changed with iced-water compresses.

October 31.—There has been slight pain in the night, and there is to the inner side of the right conjunctiva some slight ecchymosis. Atropine drops were ordered three times a day.

From this time he made satisfactory progress, and on November 5 the vision was $\frac{6}{12}$. The stitch was left in till November 19, and the eye still kept under atropine.

November 23.—The wound has quite healed up, and there is no sign of bulging. Pupil well and equally dilated under atropine; tension normal; fundus normal, with the exception that a small yellowish opacity can be seen with great difficulty, apparently near site of wound. Vision—Right eye, $\frac{6}{9}$, with diaphragm, $\frac{6}{6}$.

On December 14 the condition of the eye was the same.

Pyæmic Panophthalmitis.

For the notes of this interesting case I am mainly indebted to Mr. W. A. Greet, with whom I saw the patient twice.

Mrs. P., aged 54 years, was first seen by Mr. Greet on July 26, 1886, when she complained of a yellow vaginal discharge, which

[1] Transactions of the Ophthalmic Society, vol. v. p. 199.

had lasted fourteen days; there was no pain on micturition; she was treated by tonics and hot water injections. On August 1 she was seized with a distinct rigor, and the temperature was 103°, at the same time there was slight pain in the abdomen, but nothing else. The next day she had pneumonia at the right base; heart and urine normal.

On the evening of August 8 she had a severe fit of coughing, lasting nearly two hours, and in the morning found she could scarcely see with the left eye, and had great pain in it, though previously the sight had been good, and she had never bad eyes before.

On August 9 the left eye was injected and very painful, and the pupil did not react to light and was dilated; the tension being increased, eserine was ordered, and arrangements made for me to see her the next day to perform iridectomy if needed.

On August 10 I found her eye in the following condition:— Left eyelid slightly swollen, and about 3 mm. below the sclero-corneal margin was a horizontal rupture of the sclerotic, discharging a thin sanio-purulent fluid. The cornea was generally hazy with a peripheral necrotic opaque zone; the anterior chamber was shallow but no hypopyon; pupil slightly dilated and motionless; no red reflex; tension, —2; vision, no p. b. She said that the eye had been very painful till about an hour ago, when the pain suddenly ceased, and the eye had been running since. Mr. Greet had seen her that morning, and the eye had not burst then. I went very carefully into the chances of the eye having been struck, but it seemed impossible to have been so. I ordered warm fomentations of boracic lotion. On the following day the eye was in a state of panophthalmitis, and the pain was much less. I did not advise excision from the pyæmic symptoms, which might have produced meningitis.

During my absence from town Dr. Charnley excised the eye on August 28, and she made an excellent recovery.

I saw her again on December 17, when she seemed quite well, with the exception of an ill-defined painless swelling over the front of the left second and third ribs, below the clavicle, which was apparently rheumatic periostitis.

Paralysis of the Superior Division of the Right Third Nerve following a Blow—Perfect Recovery.

This case is interesting from the age of the patient and the symptoms following a blow. The affection was limited to the muscles supplied by the superior division of the third nerve, and, excluding syphilis, it is hard to account for it except by a hæmorrhage affecting the nerve far back in the orbit.

Nellie H., aged 1 year 9 months, came to the Central London Ophthalmic Hospital on July 23, 1886. Her mother said that the child was quite well till three weeks ago, when she hit her head in the night against the bedstead. She cried a great deal, and in the morning the right eye was very swollen and bruised. The child did not lose her senses, nor did her nose bleed. She has been a very healthy child, and there is no specific history. Mother has had no miscarriages, and this is the only child.

Patient is a very healthy-looking child. Right eye—no irregularity of the bones or swelling to be felt in the orbit; slight ptosis; no signs of bruising about the lids; no subconjunctival hæmorrhage; the eye is below the level of the left, and does not move at all upwards, though other movements are good. Pupil is equal to the left, and acts well to light. Optic disk and fundus normal, media clear. Left eye normal. Ordered hyd. c̄ creta gr. i. every night.

The symptoms continued the same till August 17, when the ptosis was less marked, and she could move the eye up a little. On October 12 the eye was apparently normal, and the movements the same as the left.

TUMOURS OF THE PALATE.

BY

STEPHEN PAGET.

Tumours of the palate have not attracted much notice, yet they form a group of great interest. They are of many kinds—cystic and solid, innocent and malignant. In the small space of the palate almost every sort and kind of tumour have been observed: cysts, nævi, papillary growths; tumours of bone and of cartilage; glandular, sarcomatous, and cancerous growths. As regards their microscopic structure, there is still much to be made out; and as regards their pathology, it is worth while to observe how closely some of them resemble the tumours of the parotid region. Thus their structure is uncertain and complex; they may contain cartilage, bone, striped muscle, and glandular and embryonic tissues; the cells may be embryonic, myxomatous, sarcomatous, or epithelial. This same complex and heterogeneous structure is found in tumours of the parotid region. Again, in their slow yet uncertain rate of growth and in their general behaviour, some tumours of the palate are very like the tumours of the parotid region. If, therefore, Cohnheim's theory[1] holds good of tumours of the parotid region, as Mr. Jacobson has shown in his admirable paper on the "Enchondromata of the Salivary Glands,"[2] this same theory may also be applicable to tumours of the palate. These too, may be of embryonic origin, may grow from particles of embryonic tissue which have lain long dormant. And this theory

[1] "Das einfachste Hypothese scheint mir zweifellos sich vorzustellen, dass in einem frühen Stadium der embryonalen Entwicklung mehr Zellen producirt worden, als für den Aufbau des betreffenden Theils nöthig sind, so dass nun ein Zellenquantum unverwendet übrig geblieben ist, an sich vielleicht von nur sehr geringfügigen Dimensionen, aber—wegen der embryonalen Natur seiner Zellen—von grosser Vermehrungsfähigkeit."—*Cohnheim, Vorlesungen ü. Allgem. Path.*, 1877, i. p. 635.

[2] Guy's Hospital Reports, vol. xxvi.

of the origin of certain tumours of the palate receives some support from the fact that there is no part of the body which suffers more than the palate from arrest and perversion of development. It is formed by a very complicated folding-in of fœtal structures; and it is just in such a region as this that a superabundant formation of embryonic tissue would naturally take place.[1] In one case, indeed, tumour of the palate was associated with perverted development of the palate and the mouth. Again, the occurrence of true congenital dermoid tumours and vascular erectile growths in the palate may be taken as evidence that some tumours of the palate have an embryonic origin.

Tumours of the palate, considered in a general way, have the following character. They occur equally in men and women, except the small polypoid and papillary growths, which are much commoner in men. They are more common in the soft palate than in the hard, and more common on the left side of the palate than on the right.[2] They grow slowly, but they may quicken after years of slow growth. They are painless, quiet, often unnoticed for many years, prone to undergo cystic or mucoid degeneration, and to soften and ulcerate.

The cases that follow speak for themselves. The best accounts of tumours of the palate are in theses by Fano (Paris, 1857), and Courtade (Paris, 1885); in Gross's "System of Surgery," and in Mr. Heath's book on "Injuries and Diseases of the Jaws." But most of the cases collected here were dispersed through various medical papers and transactions; and I wish to offer my best thanks to those gentlemen who have told me of some of them. It appears that more attention has been paid to the subject in France, by Nélaton and others, than in England.

Dermoid Tumours.

1. A male infant was born with a tumour inside its mouth which was at first mistaken for the tongue, being of the same colour and consistence; but it appeared to be thicker than the

[1] "Embryologically there is no difficulty in accounting for the position of a dermoid tumour of the palate; for the involution of epiblast which takes place at the mouth reaches back to the posterior wall of the pharynx; and, in fact, in rabbits there are four tufts of hair at the posterior part of the epiblastic involution, two on the inside of each cheek."—*Dr. Hale White, loc. cit.*

[2] This same left-sidedness is observed in hare-lip, and, as it appears, also in the tumours of the parotid region. Sir William Lawrence, when he was President of the Medico-Chirurgical Society, in giving an account of parotid tumours, said that all those that he had seen had been on the left side (Med.-Chir. Trans. xvii.); and four cases published by Dr. Patterson of Glasgow were likewise all on the left side.

tongue, and it pushed the lips apart.[1] The baby breathed with difficulty. The soft palate was partially cleft; the tongue adhered by all its lower surface to the floor of the mouth, and the lips were also unnaturally adherent to the gums. On the dorsum of the tongue was a rounded tubercle the size of a small hazel-nut.

From the middle of the hard palate grew a tumour, which was lobed, covered with silky hairs, especially on the left side, flattened and soft, and it had a little polypoid appendix on one side. It was cut off, without hæmorrhage. Its surface was of true skin, with large sebaceous glands, but no papillæ containing vessels or nerve-filaments; inside, it was composed of adipose tissue, with a central fascicle of striped muscular fibre radiating outward toward the surface.—*Clérault, Bull. Soc. Anat.*, 1874, p. 380.

2. A female child, aged 3, was brought to the Hospital with difficulty in swallowing, especially in swallowing solids. On examination of the mouth, "a body was seen, which at first sight appeared to be an immensely hypertrophied uvula. It was about two inches long, and about the size of one's first finger, and was probably attached to the soft palate behind the uvula. It was of a bright red, and was freely moveable on a broad base." It was ligatured and cut away by Mr. Morrant Baker. Its surface was of skin, with hairs and sebaceous glands and numerous papillæ, in which were seen vessels, but not nerves. There were also a few sweat glands. The interior of the tumour was of fibrous tissue, with fat in the interstices; and running vertically through it was a plate of cartilage consisting of cells, much smaller than is usual, and so numerous that it was difficult to make out any intercellular substance.—*Dr. Hale White, Path. Soc. Trans.*, 1881.

3. A male child was observed for two days after birth to have very great trouble in breathing and very marked cyanosis. There was on the right anterior pillar of the fauces a small rounded tumour with a stout pedicle. It was found to consist chiefly of adipose tissue, contained in the interspaces of a fibrous matrix. In the middle of the pellets of fat thus formed were fragments of cartilage, some of which showed points of ossification. In the centre of the tumour was a cystic cavity, containing a glairy sticky liquid, without smell or colour; the wall of this cyst was lined with skin containing sebaceous and sweat glands and elastic tissue.—*Legroux, Soc. Anat.*, 1867, p. 10.

[1] A case has lately been in the Hospital, under Mr. Baker's care, of a smooth, rounded, pedunculated growth hanging from the roof of a man's mouth, just behind the front teeth. The man could, with his tongue, push the growth forward between his teeth; it then looked almost exactly like his tongue.

4. A child was born with a large tumour protruding from its mouth, almost suffocating it. An hour later it was excised; the hæmorrhage was controlled by pressure, and the child lived for some hours. The mass was eight inches long, and five or six broad; it had grown from the hard palate. It was a parasitic growth, showing rudiments of limbs and external generative organs. It contained numerous growing centres of cartilage and bone, cavities holding reddish grumous fluid, and four inches of a double intestinal tube with a single mesentery.—*Dr. Kidd, Dublin Hosp. Gaz.*, 1856.

Remarks.—In Case 1, beside the interesting malformation of the tongue, lips, and soft palate, the hard palate was deeply hollowed out by a sort of fossa, running along the median line, and forming a bed for the tumour. Such high-pitched narrow palates may be in themselves a sign of imperfect development; they often go with great stupidity,[1] and with a weak chinless lower jaw.

With the presence of striped muscle in this tumour may be compared Wagner's[2] case, where there was a small flattened tumour, the size of a pea and sharply circumscribed, growing in the submucosa of the posterior surface of the soft palate. It was composed of striped muscle. Nélaton, in his Lectures, speaking of tumours of the palate, points out that in the soft palate there are two layers, anterior and posterior, and that the anterior layer is rich in glands, while the posterior layer is the more muscular; and argues from this that we may naturally look for glandular tumours in the anterior layer of the soft palate, and for tumours of striped muscle in the posterior layer of it. Striped muscle has also been found in tumours of the parotid region.[3]

Case 2 is well described and figured by Dr. Hale White in the Pathological Society's Transactions for 1881. There was some uncertainty as to the exact attachment of the tumour. Dr. White gives a reference to a similar tumour, which grew, not from the palate, but from the basilar portion of the occipital bone.

Case 3 is only the involuted form of Cases 1 and 2. Similar dermoid cysts occur under the tongue[4] and in the neck,[5] at the first branchial cleft, and most often of all at the junction of the

[1] Centralblatt f. Larnyg., October 1886, p. 131.

[2] Ziemmsen's Encyclop. vi.

[3] A very interesting case, with references to the literature on this subject, was published by Dr. Post, Amer. Journ. Med. Science, Philad., 1883.

[4] Pathological Society's Transactions, 1881, p. 201.

[5] For remains of embryonic tissue in the neck, see Virchow's Archiv., 1886, p. 206.

frontal process and the superior maxillary process in the embryo, near the external angular process of the frontal bone.

Case 4, in spite of its much graver character, is of the same kind as the preceding three. The child was otherwise well-formed and healthy; its placenta was single and normal, but very large.

Professor Pancoast, of Philadelphia, had a case where a similar parasitic mass grew out of the cheek of a male child. He boldly removed it, and the child made a good recovery.

Cystic Tumours.

True simple single cysts of the palate must be very rare: a long search has only brought to light one case:—

A woman, aged 50, who had suffered from caries of her right upper incisors, found in her mouth a swelling, the size of half of a pigeon's egg, extending over the right half of the hard palate. It was elastic, with a feeling of fluctuation. The mucous membrane over it was natural. In its enlarging, it had pushed the hard palate somewhat over toward the left side, so as to form a sort of heaped-up crest. It gave her no pain, but caused some trouble in swallowing,

The two incisors were extracted, but without any change being produced in the cyst. Some months later, with a trochar, some yellowish serous fluid was let out. The cyst was injected with Morton's fluid, and a cure was effected.—*Saucerotte, Gaz. Med.*, 1856, p. 415.

Mr. Bryant (Guy's Hospital Reports, 1869–70) gives the case of a woman of 25, who had a tumour of the palate of fifteen years' duration. It was the size of a walnut, irregular, bossy, springing from and involving the back part of the left half of the hard palate. It appeared to be made up of cysts, and some of the cysts were translucent. It gave very little inconvenience, and no pain. Mr. Bryant punctured one or two cysts, letting out clear tenacious fluid mixed with blood. No permanent alteration was produced. The growth "appeared to be of a polycystic kind."

(For cystic sarcoma, see Sarcomata, Case 9.)

In the following case, what was probably a chronic abscess was mistaken for a cyst:—

"I was consulted by a woman who was said to have an abscess of the hard palate, which was giving her much trouble in speech and in swallowing. I found fluctuation, and incised the supposed abscess from before backward; but instead of pus a whitish stuff came out, like the contents of a sebaceous cyst. I was told that the swelling had come slowly and without pain, and that it had

already been laid open twice, and had filled again each time. I enlarged my opening, and plugged the cavity with lint. The patient was completely cured. It was probably an abscess due to alveolar disease, whose contents had become caseous."—*Cruveilhier, Anat. Path.*, iii. 360.

It appears that disease of the alveoli may cause the formation of a blood-cyst. Thus Jourdain [1] gives a case of a fluid swelling occupying all the left half of the palate. One of the incisors was decayed, and there was a fistulous opening above its root. On incision, instead of pus there was a free flow of blood; and on another incision being made some days later, there was another hæmorrhage—a more severe one. Jourdain quotes another case, where a fluid swelling of the palate was first noticed after some ice had been in the mouth; an incision was followed by serious hæmorrhage.

Dentigerous cysts occur not very rarely in the palate. Thus Diday [2] gives a case where a canine tooth was enclosed in a cavity formed in the palate bone, and another where two teeth were enclosed in a similar cavity. The bony wall of the cyst toward the mouth was gradually absorbed, so that the teeth were extracted through the mouth. Rouet [3] gives a case where a tooth was encysted in the middle line of the palatine arch. In the Musée Dupuytren (Catal. iv. p. 213) is a specimen taken from the body of a man aged 20. It shows all the sixteen upper teeth in their proper places; but in the left half of the palate, near the middle line and the alveolar border, there is a canine tooth which has pierced the bone and has stretched the mucous membrane over itself. There are similar specimens in the Museum of the College of Surgeons. Magitôt [4] records two cases: one of an old woman of 74, who had for many years a hard swelling on her palate the size of an almond. At last it began to give her pain, and after a short time a canine tooth broke its way through. The other, of a man of 30, who had for eight months noticed a hard swelling on the right side of his hard palate. It was associated with weakness of the right external rectus muscle, and afterward with neuralgia. On incision, pus was let out, and a canine tooth was found in the cavity.

Vascular Growths.

Nævoid growths of venous tissue have been observed on the palate. From the following cases it appears that they are usually of a purple or livid tint, and of a soft, spongy, or doughy feel; that they have a tendency to bleed, and may vary in size, now

[1] Maladies de la Bouche, i. 437.
[2] Thése de Paris, 1839.
[3] Bull. Soc. Anat., December 1854.
[4] Centralbl. f. Laryng., i. 119.

larger, now smaller. Gross, beside his own case, mentions another vascular tumour of the palate, which "bled, as it seemed, vicariously for the menses."

It is to be observed that the operations recorded for their removal were done before the days of electrolysis, and most of them without anæsthetics.

1. A man, aged 47, had in boyhood a tumour of his palate the size of a pea. It now was the size of a chestnut, and caused difficulty in breathing. It lay on the right side of the palatine arch, toward the back of it: it was soft and moveable, and of a dark purplish colour with reddish spots and streaks. At the operation it was seized with vulsellum forceps, and removed with curved scissors. There was free venous hæmorrhage, checked by pressure and the use of styptics. The tumour consisted of a network of vessels, mostly veins, joined together by very delicate connective tissue.—*Scarpa, Opusc.*, ii. p. 193, ed. 1825.

2. A man, aged 44, had for twelve years noticed a tumour in the roof of his mouth: when he first noted it, it was the size of a small hazel-nut, and fixed, and overrun with veins. It now occupied the whole palate; it was fixed, not elastic, firmer than a fatty tumour, and broader posteriorly than anteriorly: it gave trouble in speech and deglutition. At the operation, a rush of blood took place when the envelope of the tumour was divided, and the tumour was part cut and part torn off as quickly as possible. The bleeding was very free, and was stopped with the actual cautery. To the naked eye the texture of the tumour was like lung-tissue in an early stage of inflammation. It consisted of a venous network with granular interstitial connective tissue.—*Vidal de Cassis, Path. Ext.*, iii. p. 502.

3. A man, aged 45, had a congenital vascular erectile tumour of the palate. It was ovoid in shape and of a dark livid colour: it had caused partial absorption of the bone.—*Gross, System of Surgery*, ii. p. 467.

4. A woman, aged 50, had a venous erectile tumour of the right half of the palate. She had first noticed it twelve years ago. The growth varied in size from time to time, and attempts to treat it by compression did more harm than good. It became smaller after an incision had been made into it, but afterward it grew again. As it had first been noted after fracture of an upper incisor on the same side, the fractured tooth was extracted, with the result that the tumour again became smaller, and almost

disappeared; but afterward it grew again.—*C. S. Bate, Amer. Journ. Dent. Sc.*, 1855, p. 150.

5. A boy, aged 12, of scrofulous diathesis, had long been the subject of a tumour of the palate, but it had been neglected in the care of his general health. It now occupied all the palate, and nearly filled the mouth when it was shut. It was firm, of irregular outline, with spongy brown protuberances, which bled very easily. An incision into it was followed by bleeding so severe as to cause syncope. The growth was plugged, and three days after it was ligatured. There was no recurrence three years later. The growth was found to be a "varicose tumour of the palatine veins."—*Schmidt's Jahrbuch*, 1839, p. 210.

To these five cases may be added the following case of a tumour described by the surgeon who removed it as an "angio-sarcoma." The patient had at the back of the hard palate, in the middle line, a sessile tumour the size of a pigeon's egg, smooth, pale, and soft. It was removed under an anæsthetic, the head being hung backward and downward. It contained numerous dilated vessels with thickened walls, and here and there saccular widenings. The vessels were surrounded by masses of round cells, which in places were being converted into fibrous tissue.[1]

Aneurysms of the palatine artery have been observed as follows:—

1. A man was accidentally stabbed with a small knife on the right side of the hard palate. Two months later there was a soft pulsating swelling at the seat of the injury; it was the shape and size of a large pea. It was laid open, and the artery was tied at both ends.—*Gross, System of Surgery*, ii. p. 468.

2. A man, after wearing a dentist's plate, which was not comfortable, for some weeks, complained of a small rounded swelling on his palate, just where it had been rubbed by the edge of the plate. The swelling was the size of a large pea; no pulsation was observed in it, nor any other appearance than that of a small cyst. It was laid open with a pair of curved scissors, and at once a rush of blood came in jets, almost suffocating the patient. It was, however, stopped by pressure.—*Castle, Gaz. Med.*, 1851, p. 789.

3. A man, aged 74, had a small soft swelling in the roof of his mouth; it pulsated, and could be made to disappear under pressure, and there had been frequent hæmorrhages from it. It was

[1] Centralbl. f. Laryng., ii. 441.

of three months' duration, and there was no history of any injury. It was treated with the actual cautery; the eschar fell off on the ninth day, leaving a healthy granulating surface.—*Teirling, Gaz. Med.*, 1856, p. 343.

Castle quotes, as parallel to his own case, one recorded by Herapath (*Lancet*, ii. 1850, p. 46); but this latter was probably only a wound inflicted on the artery in the incision of a small alveolar abscess in its neighbourhood.

Treatment.—It is probable that for the treatment of these small aneurysms and nævoid growths electrolysis is best.

Cartilaginous and Bony Growths.

These seem to be very rare, and of no particular interest. Diday records one case of an osteoma of the arch of the palate, having its lower surface level with the teeth, and he quotes another case of a similar tumour growing from the posterior part of the palate. Fox (Diseases of Teeth, 1814) mentions the case of a young lady in whom a "cartilaginous substance" formed in the roof of the mouth; it was dissected out by Abernethy. He also figures a case of "exostosis of the palate;" but it does not appear to have been more than a downward extension of the vomer, so that the palatine suture is heaped up in a kind of thick ridge. Such a ridge is not very rare; it was thought by Cruveilhier to be a sign of congenital syphilis. Jourdain gives a case of osteo-cartilaginous tumour of the palate in a man of 30. It was of seven years' duration. It occupied the whole palate, so that the man could only take liquids. An incision was made through its base, and it was removed. Hæmorrhage recurred some hours after the operation, and the actual cautery was applied.

Calcareous Deposits.

Beside the occurrence of calcareous salts in the substance of other tumours (see pp. 332, 336), there are two cases recorded by Anselmier (*Union Med.*, 1856, p. 509) of masses of calcareous salts embedded in the soft palate.

1. A boy of 16 complained of some difficulty in respiration and deglutition, which had lasted a considerable time. He had two masses in the soft palate, one on each side of the uvula. They were the size of hazel-nuts, hard, rounded, and moveable under the mucous membrane, which was healthy but reddened. On the introduction of a probe through the dilated mouths of the palatine glands, it felt as though a stone were struck. A fragment of linne

rag dipped in dilute sulphuric acid was introduced into one of these dilated glands and pushed down upon the calcareous deposits; it was hoped that it might dissolve them. The next day they were gone.

2. A man of 25 complained of difficulty in respiration. His voice was nasal and his throat felt uneasy. At the base of his uvula, and along the free edge of his soft palate, were three small swellings the size of large peas. They were rounded, fixed, indolent; the mucous membrane over them was healthy. They gave the same sensation of a stone being struck as in the former case; the same treatment was adopted, and they disappeared in four days.

No similar cases appear recorded, nor is it certain what was really the matter in these two; but the occurrence of calculi in the ducts of the salivary glands may throw some light on Anselmier's cases. His treatment of them was certainly ingenious and successful.

Polypoid and Warty Growths.

Polypoid growths of the palate are not very uncommon. They are, as a rule, delicate little outgrowths of connective tissue, attached by a slender thread-like pedicle either to the uvula or to the soft palate near the uvula, never to the hard palate; in their colour and outline some of them look like extra uvulas. A common place for them[1] is the angle between either border of the uvula and the neighbouring border of the soft palate. Sometimes two are found symmetrically placed one on each side of the uvula; sometimes they occur in connection with similar growths on the tongue or on the larynx. As a rule, says Courtade, their surface of stratified epithelium is mammillated or finely wrinkled or roughened with minute filiform papillæ like those on the tongue; their pedicles are covered by the same kind of epithelium, but smooth, not papillated. Their lymph-spaces are well developed; their blood-vessels are large, and dilated even to the extent of forming a sort of cavernous tissue; they contain no glandular tissue; and nerve-fibres have been found in one case, and not in another. They do not seem to occur in childhood, and they are much commoner in men than in women.

Another form of the same sort of growth is the true warty

[1] "Als hauptsächliche Sitze der polypöse Geschwülste der Rachenorgane lassen sich aufführen (1) die Uvula, von deren seitlichen Rande, nahe der Spitze, sie nach abwärts hängen (2) an der Basis des vorderen Gaumenbogens; hier hab' ich 4 mal Papillome gefunden, bei jungen Männern mit chronischem Rachenkatarrh; (3) am freien Rande des vorderen Gaumenbogens."—*Gerhardt, Centralbl. f. Laryng.*, i. p. 21.

florid papilloma, with little or no pedicle, but resembling venereal warts, and sometimes due to syphilis. This form of papilloma may extend over the whole palate, and may become the seat of cancerous disease.

Courtade,[1] in his thesis, suggests that chronic pharyngitis, which was present in seven out of ten cases of these growths, may help to cause them in persons predisposed to them. The same view seems to be taken by Dr. Stephen Mackenzie[2] of similar growths in the pharynx, and by Gerhardt in the note just quoted. But the occasional symmetry of the polypoid growths, and the fact that they occur chiefly in one part of the soft palate, and never on the hard palate, and never show the least sign of suppuration, are evidence that previous inflammation has not much to do with the production of them. They are allied to the large pendulous fibro-cellular, myxomatous, and fatty growths which occur in the pharynx, which have nothing at all to do with any previous inflammation.

These polypoid growths of the palate may exist for years without any symptoms, and may be found only by accident. More often they produce a tickling of the back of the throat, with frequent efforts at swallowing. In Gerhardt's two cases (Nos. 14 and 15) the laryngeal nervous symptoms are of very great interest. He quotes another similar case. In another very interesting case one of these growths caused hysterical crises of an epileptiform nature;[3] and the writer has lately had under his care an invalid in whom a distinctly epileptiform seizure, with choking and sense of suffocation just preceding it, appeared directly due to a very hypertrophied uvula.

The removal of these little growths is indicated; for apart from the inconvenience of them, they may increase in size, or may even change their character and become malignant. In the case of the true warty growths, syphilis may be concerned.

The cases that follow are, to save trouble, arranged in a tabular form.

[1] "Cette inflammation chronique de l'arrière-gorge provoque une suractivité du côté de la muquense du voile du palais dont les papilles sont déjà volumineuses, et devient ainsi une cause d'hypertrophie. . . . Mais l'existence d'une pharyngite chronique ne suffit pas à elle seule pour donner naissance à un papillome, pas plus qu'un écoulement vaginal ne s'accompagne fatalement de végétations vulvaires, bien que ce soit le plus souvent une des principales causes. Il faut faire une large part à l'inconnu."

[2] He speaks of a small oval semitransparent innocent polypus, growing from the right side of the gullet, an inch below the cricoid, as "a polypus arising from inflammation of the œsophageal mucous membrane."—*Mackenzie, Diseases of Throat and Nose*, ii. 105.

[3] "Chez un malade de 19 ans que Herzfelder a observé, un polype papillomateux du voile du palais donnait lieu, quand il était couché, à des crises hystériques, épileptoïdes, qui disparurent après l'extirpation de la tumeur."—*Courtade.*

No.	Reference.	Sex and Age.	History.	Tumour.	Treatment.	Remarks.
1	Courtade.	M. 50	No symptoms at all.	He had two perfectly symmetrical filamentous outgrowths, one from either border of the uvula: they were cylindrical, 10 mm. long by 1 thick. They showed no thickening of their ends; no warty growth.	Removed.	A polypoid growth, of a sarcomatous nature, had been removed from the larynx a few months ago. The microscopic structure of the palatine outgrowths was like that of the pedicles of the polypi which have thickened ends.
2	Courtade.	F. 41	Hæmoptysis 20 years ago; cough ever since. Of late has had a pain in swallowing, and coryza, followed by dryness of the nasal passages.	A large papilloma grows from the base and left side of the uvula.	Removed.	A polypoid growth on the tongue, to the right of the middle line, was removed a month later.
3	Semon.	M. 30	No symptoms at all.	He had two perfectly symmetrical outgrowths, one from either border of the uvula: they were reddish, longish growths: it looked just as though he had three uvulas.		Compare Case 1.

4	Courtade.	M. 33	Has suffered from bronchitis, and is very nervous. A month ago he had sudden constricting pain, like strangulation in the throat, and was treated for laryngitis.	He had now a small pedicled growth hanging from the soft palate near the uvula: it is about 1 ctm. long, and is wrinkled, and rough with long filiform papillæ, like the tongue.	Removed with scissors.	"Les symptômes diminuent rapidement après l'opération. Les mouvements de déglutition incessants ont disparu; la sécrétion nasale, abondante avant, diminue à partir de ce moment."
5	Courtade.	M. 20	Had for a few days felt tickling at back of throat, causing frequent swallowing.	Has a growth from one side of the palate, 1 ctm. long, with a long narrow pedicle.	Easily removed; no bleeding.	
6	Courtade.	M. 25	Chronic pharyngitis of many years' duration: slight deafness 6 years.	A flattish growth, rough and wrinkled, the size of a lentil, just in front and to right of uvula.	Removed.	Signs of old inflammation of membrana tympani and of laryngitis. There were never any symptoms referable to the tumour.
7	Courtade.	M. 32	Pharyngitis: congestion of epiglottis. For last eight days a cough, which ceased when he lay down.	On the left anterior pillar of fauces is a red flattened vegetation with a thick pedicle.	Removed with galvano-caustic loop.	
8	Courtade.	M. 40	Chronic glandular pharyngitis: hypertrophy of inferior turbinated bones.	A little to the left of the tip of the uvula is a growth about 1 ctm. long, with a very narrow pedicle.	Removed with scissors.	There was some bleeding, stopped by zinc chloride.
9	Riley, Phil. Med. Times, 1880.	M. 32	Complained of deafness: tumour discovered by chance.	Large papilloma pendent from tip of uvula.	Removed: bleeding profuse.	He was entirely ignorant of the growth: it had caused no trouble, not even cough.

No.	Reference.	Sex and Age.	History.	Tumour.	Treatment.	Remarks.
10	Heath, Diseases of Jaws.	F. 18	No symptoms: came to have her teeth stopped.	A pedunculated papillomatous growth half inch long, from left side of soft palate.	Removed: rather profuse bleeding.	It was a compound papilloma, of enlarged fungiform and filiform papillæ.
11	Wilks, Path. Trans. vii.	M.	Irritation in throat some weeks.	Tumour very like uvula, growing from soft palate near uvula.	Removed easily.	Compound papilloma.
12	Verneuil, Soc. Anat., 1858.	F. 12?	Had lately had inflammation of throat, which left a persistent dry cough.	She has a tumour 3 ctm. long, hanging by a pedicle from the edge of the soft palate.	Easily removed: no hæmorrhage.	Compound papilloma.
13	Lloyd, Lancet, 1881.	M. 17	Noticed two years ago: gives no pain or trouble: sore throat six months ago.	A tumour size of marble, growing from right anterior pillar: pedunculated, pale, soft, freely moveable.	Cut off with scissors: scarcely any hæmorrhage.	Papilloma, very much resembling an ordinary gonorrhœal wart.
14	Gerhardt, Arch. f. klin. Med., July 1873.	F. 20	Frequent swallowing movements, with feeling of a foreign body, followed by transient aphonia. The aphonia became permanent a week before operation.	A pendulous growth 1 ctm. long from the left anterior pillar of the fauces.	Removed with scissors: later, faradisation.	Complete recovery of voice. The aphonia was due to imperfect paralysis of both thyroarytenoids and of the arytenoideus.
15	Gerhardt.	F.	Chlorosis, chronic bronchitis. Frequent pains in the neck: pain on reading aloud, sometimes complete loss of voice.	A very minute polypoid growth on the right posterior pillar of the fauces.	Removal difficult on account of the exceeding minuteness of the growth.	Complete loss of pains in neck: complete recovery of voice. The loss of voice was due to imperfect closure of the vocal cords.

Remarks.—Other cases are recorded (Semon, St. Thom. Hosp. Reps., 1883), but this table may suffice to show that the true polypoid growths of the palate are always of the soft palate, and are usually placed at its free edge, near the uvula: that they are soft, rounded, slender outgrowths, which, as a rule, have a body and a peduncle, but may be mere rounded outgrowths, like the uvula itself. Moreover, they may be double and symmetrical, one on each side of the uvula. Thus, they are not like the products of irritation or inflammation; and though we may not disregard the view, taken by Courtade and others, that chronic pharyngitis is an exciting cause of them, yet we must give due importance to that "inconnu," the predisposing cause.

But with regard to the florid warty growths, like cauliflower-heads, these probably do arise, in many cases, from pharyngitis, simple or syphilitic: as in the two following cases:—

1. A young man had for a year noticed a warty growth on his uvula. A year earlier he had an "infecting chancre," with general glandular enlargement, but no mucous tubercles. The present growth gives him no trouble; it covers the whole right border of the uvula, and is florid, warty, mammillated, and freely moveable. It is a simple papilloma.—*Nepveu, Bull. Soc. Anat.*, 1875.

2. At a meeting of the Société Anatomique, M. Laborie showed an outgrowth of a syphilitic character from the tip of the uvula. It had a pedicle half an inch long, bearing a cauliflower head the size of a large pea. Before removal it was of a bright red tint; it had caused feelings of suffocation.—*Soc. Anat.*, April 1838.

The following case of true warty growths of the palate is very interesting:—

"A man of 48 had the whole of the left side of his palate, both soft and hard, covered with a florid vascular easily-bleeding warty growth, of only six months' duration: painless. Many of the papillæ were over a quarter of an inch long. The growth was "kept in abeyance" with caustics. After a time it grew more quickly, and became malignant.—*Gross, System*, ii. 467.

For the uselessness of caustics, compare page 347. It would have been better to remove the growth freely. A similar warty growth diffused far and wide inside the mouth of a dog was lately shown at one of the Societies.

"*Adenomata.*"

There is much uncertainty as to these tumours of the palate: it appears to be a name given to any solid indolent innocent sessile tumour, without much regard to microscopic structure. In most of the recorded cases there is no account of microscopic appearances; and the accounts that in other cases are given do not appear to have much in common. In two cases lately reported by the writer to the Pathological Society, where the history, manner of growth, and naked-eye appearances of the tumours made it certain that they were absolutely innocent, there were masses of epithelial cells with cell-nests. The word "adenoma" applied to tumours of the palate has only a clinical value: it means only an innocent tumour, very slow in growth, firm, limited, and, as a rule, shelling-out easily. These facts are shown by the following table of cases:—

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
1	Bryant, Pract. Surg. vol. i.	M. 38	Six years' duration : six weeks' serious interference with speech and deglutition	A globular fibrous growth, size of an unshelled walnut, in posterior and upper part of right half of soft palate.	Enucleation after free incision. Tracheotomy to avoid suffocation.	Alveoli of fibrous tissue filled with epithelial cells.	Trendelenburg's tampon was used, and found to be of great value.
2	Michon, Bull. Soc. Chir. ii. 434.	M. 36	Ten years' duration : interference with speech and deglutition and respiration, especially during night.	A rounded, lobular, firm growth, the size of a hen's egg, in the left half of the hard palate. The mucous membrane over it was red, smooth, moist, and free from ulceration. There were no enlarged glands.	Enucleation with the fingers, after an incision round.	Tumour showed :— 1. Glandular culs-de-sacs. 2. Nucleated epithelium, free or in masses. 3. Cell-nests (?).[1] 4. Fibro-plastic elements, and tracts of fibrous tissue.	
3	Nélaton, Lectures, p. 483.	M. 28	Fifteen years' duration.	A hard, moveable, non-adherent growth, the size of a hazel-nut, in middle line of the soft palate.	Extracted with the greatest facility.	"Glandular."	
4	Nélaton, Monit. des Hop. 1857.	F. 26	Very long duration : had lately been growing more rapidly : con-	A smooth mass, filling the cavity of the mouth, depressing the tongue,	Free incision over tumour and enucleation. A hole	Adenoma.	Nélaton began meaning to ligature the

[1] "Noyaux entourés de leurs cellules."

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
			stant trouble in speech and respiration, with attacks of suffocation; deglutition almost impossible. Danger imminent.	touching the epiglottis, and pushing the soft palate up and back. Mucous membrane thinned, but healthy; not adherent or ulcerated; no glands enlarged.	was left in the bone.		tumour, but found that it shelled-out with ease. The hole closed, all but an opening 3 mm. broad.
5	Nélaton, Monit. des Hop. 1857.	M. 34	Twenty years' duration: had lately been growing more rapidly, and extending toward tonsil. Voice nasal. Can swallow solids easily enough, but fluids are apt to return through the nose, or get into the air-passages. General health good.	A hard growth in the left half of the soft palate; it did not project from the back of the palate; it was the size of half of a hen's egg lengthwise. Mucous membrane over it was smooth and freely moveable, and showed one large vein. No glands.	Free incision over tumour and enucleation with a spatula, and with one finger put up behind the soft palate for a *point d'appui*.	Adenoma, with traces of fatty and calcareous patches.	"Solide, et même d'une dureté assez considérable, rappelant celle de certaines tumeurs fibreuses ou des ganglions lymphatiques atteints d'inflammation chronique." The finger put up behind the soft palate was found very useful; it checked the bleeding; there was only slight oozing, stopped by syringing.

6	Syme, Bull. de Thérap. li. 186.	M. 38	... ...	A hard, slightly moveable growth in left half of soft palate, 4 ctm. in diameter.	Free incision over tumour and enucleation, with touches with the knife.	Adenoid. "Un spécimen parfait de ces tumeurs fibreuses qu'on trouve si souvent dans la parotide ou la mamelle."	No ligature needed. It looked at first like an hypertrophied tonsil.
7	Patterson, Glasg. Med. Journ. 1880, p. 240.	F. 66.	Eighteen years ago she noticed a small growth at the junction of the soft and hard palate, on the left side. It increased very slowly. She is very feeble.	Growth completely fills cavity of the mouth, so that its attachment and relations cannot be defined. Nostrils quite free. She can swallow fluids and soft solids.	The cheek was split, and a ligature was put through the tongue. He then scratched through the capsule, and enucleated the tumour with his finger.	Adenoma. In some parts mucoid degeneration of the cells. In one part great condensation of tumour, with new formation of connective tissue.	Enucleation was both difficult and tedious. The only blood lost was from the division of the cheek. This healed by first intention; but she never rallied from the operation, and died on the sixth day.
8	Nélaton, *sup. cit.*	F. 15.	Noticed four years ago; then almost as big as now. Slight trouble in swallowing; speech a little altered; respiration perfectly natural. It had been incised, but only blood came, and the incision did not close.	A hard growth, softer centrally, the size of half of a hen's egg; occupies most of the left side of the palate, both hard and soft; mucous membrane over it normal in colour.	All that part of the tumour which occupied the hard palate was removed, and its base cauterized.	Glandular (Fano). Benign epulis (Nélaton).	A second operation, to remove the growth from the soft palate, was refused. This remaining part of the growth disappeared of itself later on.

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
9	Nélaton, *sup. cit.*	M. 50.	Noticed ten months ago; only discovered by his feeling slight difficulty in speech and respiration. He looked in a glass and found the tumour, but took no account of it. Lately, increased dyspnœa.	A growth, size of a nut, in the right half of the soft palate, pushing the free edge of it down behind the tongue, and pushing the uvula to the left; seeming indeed to grow over the middle line. Palate perfectly moveable. Mucous membrane perfectly moveable over growth.	He made an incision over the tumour, and with his two index-fingers enucleated it "with the greatest ease and speed."	Glandular; encapsuled; softer than usual; "contenant une pâte, une bouillie rougeatre dans laquelle on distinguait des lobules intacts."	
10	Velpeau, *ibid.*	F. 32	Twelve years' duration.	A lobulated, hard, elastic growth, at the back of the arch, to the left, near the middle line. It has a vascular pedicle 1 ctm. diameter. Mucous membrane normal.	Removed. Free bleeding stopped by perchloride of iron.	Adenoma.	Bleeding recurred from a little artery at the back of the wound: was stopped by actual cautery and dry lint.
11	De Bergerac, Gaz. Hop. 1855, p. 162.	F. 60	Twenty years' duration. In the last six months it has grown rapidly.	A round, smooth, resistent, elastic growth, occupies upper part of soft palate, and posterior fourth of hard, and back of R. alveolus. Adherent by a wide base. Mucous membrane intact.	Extirpation.	Adenoma, with phosphatic concretions.	

12	Velpeau, Mon. Hop. 1853, p. 1134.	M. 31	Twelve years ago he had frequent difficulties in swallowing: he put his finger in his mouth, and found a tumour the size of a small nut. Taste and resp. normal: voice rather thick: fluids return by the nose, and there is some dysphagia: he swallows and retches and spits often.	A nodular, hard, elastic growth occupies all the R. soft palate, and a little of the R. hard palate: size of a walnut. Nowhere adherent. Mucous membrane is normal, and not adherent.	Removed by two incisions circumscribing it. Free hæmorrhage.	Adenoma.	
13	Marjolin, Bull. Soc. Chir. ii. p. 79.	F. 40	Duration uncertain. She had been treated with iodide of potassium without result.	A hard, irregular growth in the back part of the palate the size of a hazel-nut.	He made an incision over the tumour, then put his finger up behind the soft palate, and enucleated the growth easily.	Adenoma.	For this method of removal compare Case 5.
14	Tillaux, Gaz. Hop. 1885, p. 258.	F. 49	A year and a half ago had frequent epistaxis, followed by obstruction of the right nostril. Had noticed prominence of right half of soft palate for a year. Frequent headaches, always on right side of head. Loss of smell in right nostril, which is completely blocked. No discharge; no deafness.	A smooth, hard, immoveable growth, occupies right half of soft palate, at its line of union with the hard palate.	He incised the palate under cocain, and enucleated the growth forthwith.	Adenoma.	From the early epistaxis and complete obstruction of the nostril, it is probable that the tumour arose in the posterior layer of the palate above the aponeurosis.

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
15	Heath: Ashhurst's Dictionary, v. 522.	F. 34	Slow growth. It interfered with her singing.	A circumscribed growth in the soft palate.	Tracheotomy first, with Trendelenburg's tampon. Enucleation; then removal of capsule.	Adenoma, contained in a distinct cyst.	"I incised the tumour, and was agreeably surprised to find that I was able to turn out with my fingers a soft mass of gland tissue distinctly encapsuled." *Contrast*, p. 349.
16	Boyer, Med. Chir. v. 349.	F.	More than ten years' duration. Now has considerable trouble in deglutition.	A hard growth, the size of a nut, occupies the palate, a little beyond the middle of it.	He removed the growth with a bistoury, and rasped the palate underneath.	Adenoma (?).	No recurrence eight years later.
17	Bruch, Soc. Clin. Dec. 1885.	M. 44.	Noticed ten years. Bled slightly some years ago, and again a month ago; now gives trouble in speech and swallowing.	A hard, clubbed growth, the size of a pullet's egg, inserted by a broad pedicle into the right half of the hard palate.	Removed with galvano-caustic loop.	Papillary adenoma.	
18	Langier, Mon. Hop. 1856, p. 441.	M. 52.	Voice has been nasal for fifteen or twenty years. Only noticed tumour a few days ago. Respiration and deglutition normal.	A hard, nodular, ovoid growth, quite free and circumscribed, occupies the whole of the left half of the soft palate. It is of the size of a pigeon's egg. Mucous membrance is healthy and moveable.	He died from other causes just before the operation. The growth was easily removed after death by enucleation.	Adenoma, with much fibrous tissue; very scanty supply of blood-vessels; some calcareous concretions.	

19	Syme, B. M. J., April 1862.	F. 46.	Two years' duration; "uneasy sensations of variable degree."	A rounded, convex growth, soft at the centre, but hard at the base, covers the posterior two-thirds of the palate.	Syme embraced the whole tumour with a trephine, and removed bone and all.	Adenoma ?.	The trephine caused no hæmorrhage, and the operation only took a few seconds. A small hole remained when patient left the hospital.
20	Bryant, Guy's Hosp. Reports, 1869–70.	F. 25.	Six years ago an abscess about the first left upper molar. Since then always some enlargement about the palate. Other abscesses in the same place four years and three years ago.	A smooth, hard, fibrous growth, elevated about $\frac{1}{3}$ inch, covers the whole of the left side of the hard palate, and also involves the alveoli and the teeth. Not painful.	The growth was completely scraped off, and all bleeding was stopped with the actual cautery.	"Of the glandular or myxomatous kind."	
21	Verneuil, Bull. Soc. Anat. 1872, p. 353.	F. 58	Six years ago, having a toothache, she looked inside her mouth, and saw a growth the size of a small nut in the soft palate, near the middle line. It has grown slowly but regularly. Father and one brother died of cancer of the stomach. She is deaf on the right side. Her voice is nasal. She has	A smooth firm growth occupies the right side of the soft palate, and extends forward to the second molar; it pushes the uvula to the left. It is moveable from before backward, and of the size of a large nut. It can be felt projecting posteriorly, and the right nostril is partly blocked. The mucous membrane over the	An incision was made over the growth, and after some dragging and freeing of the growth it came out whole. No bleeding.	The tumour is greyish peripherally, yellowish centrally. The periphery is formed by salivary glandular tissue. The centre is formed of groups of fat cells lying in a mucous tissue of stellate cells, and an intercellular substance exactly	The tumour was called "adeno-myxoma" by Verneuil, and "myxo-lipoma" by Fano, who adds, "Ce myxome lipomateux, assez commun dans la parotide, montre l'étroite liaison qui existe entre

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
			some trouble in swallowing solids.	growth is healthy and moveable, with some rather large veins. No enlarged glands.	... ...	like mucin. In this stroma are lobules of hypertrophied gland tissue, some of which is undergoing mucoid change. There was a small cyst near the surface of the tumour, with viscid fluid.	toutes les glandes salivaires, même au point de vue des dégénérescences."
22	Dr. Post, N. Y. Med. Rec. 18, p. 100.	F. 45	Noticed one month. No pain.	A firm growth in the right half of the soft palate, measuring 4 ctm. long by 3 broad.	A free incision, and easy enucleation with a rasp.	Fibrous, with a small cyst at one end.	
23	Gross, System of Surgery, ii. 467.	MS	Had grown rapidly. Interfered with speech, respiration, and deglutition.	A firm, greyish growth, the size of a small walnut, growing from the arch of the palate, and hanging down into the fauces.	"I twisted it off with a double cannula, armed with a stout silver wire."	"Adenoma."	
24	Cabot (quoted by Gross).	...	Eighteen months' duration.	A rounded, yellowish-white, nearly smooth growth on the hard palate, somewhat tender. It had, in one part, a warty appearance. It had a distinct capsule.			

25	Hutchinson (Path. Soc. 1886).	F. 30	Swelling noticed more than a year.	At the junction of hard and soft palate on left side is a very firm, elastic, round, painless growth, very ill-defined, ulcerated at centre, exposing bone.	Very free removal; periosteum scraped off and bone cauterised.	"Adenoma." No microscopic examination.	A bit of bone exfoliated, but the wound healed well. No recurrence ten years later.
26	Ibid.	M. 50	Eighteen months' duration.	Larger than 25, but otherwise just like it. Very ill-defined; a deep ulcer in centre, like a large open follicle of the tonsil, containing a cheesy pellet.	Very free removal, including in one part the whole thickness of the soft palate.	"Mixed adenomatous type; ducts and numerous acini like those of salivary glands, and follicles filled with lymph-cells.	
27	Deakin, B. M. J. Aug. 30, 1884.	M. 18	Duration not known. Swallowing of solids impossible, of fluids very difficult.	Large cauliflower growth completely filling the mouth, growing from the back of the left half of the hard palate.	Lower part of jaw removed. Patient narrowly escaped suffocation under $CHCl_3$, from tumour slipping back into pharynx.	"Fibro-myxoma."	
28	Nélaton, Gaz. Hop. 1862.	M. 25	Three and a half months ago he felt a little difficulty in swallowing; a month later he discovered the tumour, which has grown rapidly. Now trouble in respira-	The growth occupied the whole of the left side of the soft palate, pushing the uvula to the right. It was impossible to get the finger round its lower edge. Its upper part was smooth, regu-	An incision was made over the tumour, and it was easily enucleated.	"La masse blanchâtre est une hypertrophie glandulaire, de la nature des amygdales. On y trouve des culs-de-sacs hypertrophiés et	It was "harder than an adenoma, owing to its large quantity of fibrous tissue." Some of the culs-de-sacs were big

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
			tion, and still greater in deglutition. Voice much altered.	lar, and uniform; its lower part was unequal, wrinkled, and tuberculated.		d'autres de nouvelle formation, de l'épithelium nucléaire et du tissu fibroplastique."	enough to be seen with the naked eye.
29	T. Smith, St. B. H. 1886.	F. 21	Four years' duration: no marked symptoms, but slight change in speech for two years or more. Two months' pain on swallowing. Three weeks ago there was a "gathering" at the back of the growth, which broke.	A small, smooth, rounded growth, elastic almost to fluctuation, occupies the right half of the hard palate. Mucous membrane over it is natural. Growth is ovoid, $\frac{3}{4}$ in. in length, $\frac{1}{2}$ in. across.	On puncture, no fluid. The mucous membrane was incised, and the tumour was easily enucleated.	Epithelial, with cell-nests as well as embryonic gland tissue. Hyaline granular substance, apparently from degeneration of epithelial cells. Masses of embryonic connective tissue.	It lay in a smooth shallow pit in the bone, just as a dermoid cyst lies on the frontal bone.
30	Walsham, St. B. H., 1886.	F. 40	Fourteen years' duration, more rapid of late.	A small, smooth, elastic growth occupies the left half of the hard palate: it has the same shape and dimensions as 29. It is freely moveable, and the mucous membrane is freely moveable over it.	An incision was made over the tumour, and it was easily shelled-out.	Masses of cells, mostly small round embryonic, but some epithelial, with nests. Much connective embryonic tissue and gland tissue.	

31	Stokes, Med. Pr. and Circ., Sept. 1879.	M. 8	Six weeks ago "they observed a sudden change in his voice, and found a lump in his mouth." No dysphagia. No nasal obstruction.	There is an elastic, unequal, nodular growth in the left half of the soft palate: it overlaps the middle line, but does not pass it. It has no bony attachment, but is lodged in the substance of the soft palate. Numerous vessels ramify over it. The mucous membrane, which is slightly excoriated, moves freely over it.	An incision was made over the tumour: the mucous membrane was easily detached, and the surgeon "eventually succeeded" in enucleating the growth. There was very smart bleeding. No ligatures necessary.	Fibrous tissue over a cartilaginous matrix: "it has also masses of round cell, evidently of a recent growth, and of a more or less sarcomatous nature."	This tumour is not really an adenoma, but it is put here as being halfway between the innocent tumours and the sarcomata.

Remarks.—First, it is most important to observe that these tumours are innocent. Though most of them had been in existence for many years before removal, yet there is not a single case where the lymphatic glands or remote organs were affected; nor is there any case recorded of recurrence of the growth after removal. Clearly these tumours are innocent: we must not call them sarcomata because embryonic tissue is found in them, nor must we call them carcinomata because epithelial cells and cell-nests are found in them. They are equally common in men and in women. They appear usually either about puberty or between 40 and 50; thus the *average* age of their appearance is about 30. They are much more common in the soft palate than on the hard, and rather more common on the left side than on the right. Their growth is extraordinarily slow, and they usually remain for a very long time without giving trouble, or even without being noticed at all. Thus, six of those here tabulated had lasted undisturbed for more than five years, and nine had lasted for more than ten years. There is surely no other place in the whole body where a visible and tangible growth could for so long a time be known to exist and yet be left undisturbed. But, as one patient said, "I never looked inside my mouth." We are never conscious of our palates, as we are of our lips and tongue; least of all are we conscious of our soft palates.

In shape these "adenomata" are rounded or oval, with their long diameter from before backward; they are sessile, very rarely pendulous. In consistence, they vary from an elasticity so well marked as to imitate fluctuation to a hard inelastic toughness like that of an old inflamed gland: but, as a rule, they are elastic. They may be softer at their centre than at their base or their periphery. The mucous membrane over them may be papillomatous, or marked with fine wrinkles. It may be thinned from inside by the pressure of the growth, but it very rarely adheres or ulcerates. Even if it is thinned, it remains healthy and freely moveable and unbroken over the growth; it may even be pinched-up in wrinkles over it. The growth itself is, in nearly all cases, freely moveable. If it is in the soft palate, it just lies embedded there, free from any attachment to the bone; if it is in the hard palate, it may rest in a smooth shallow pit in the bone, as a dermoid cyst rests in a pit on the frontal bone: but it does not, as a rule, grow from the bone.

Though these tumours are so indolent, they may, after years of very slow increase, begin to grow quickly; nor does it appear that this increased speed of growth is necessarily due to any change of type.

Mr. Hutchinson has called attention to the slow perforating

ulceration which occurred in the two rare cases (25 and 26) which he lately published. There are, it appears, three ways in which ulceration of tumours of the palate may occur. It may begin in simple excoriation, as in Case 31. It may be due to fungation of a malignant growth, as in case of the true cancerous growths of the palate; or it may be due to central softening or degeneration of the growth, as in Cases 8, 9, and 19, just recorded.

In structure these tumours are most perplexing. They may contain glandular tissue, yet not usually well-formed ducts and acini, but masses of epithelial cells, without any very definite shape or arrangement, part being developed into gland tissue, part forming true cell-nests, part breaking down into irregular extensive tracts of a hyaline granular substance, amorphous or fibrillated at the edges, a substance not unlike the horny substance inside cell-nests; part forming horny or colloid bodies, not much differing from cell-nests. Blended with this strange epithelial element is a quantity of embryonic connective tissue, or of fully formed fibrous tissue. Myxomatous tissue is also found; and these tumours may imitate the structure of the salivary glands or the tonsils.[1]

There is no single name for such a complex growth as this. It is perhaps best that these tumours should be looked at, not from a microscopic, but from a clinical point of view. They are closely analogous to the tumours of the parotid region. They grow just in the very place where development is most apt to fail or to err—in the very place where dermoid and parasitic growths have also occurred. Their anomalous and heterogeneous character may therefore be due to their being, in some way or other, embryonic. They are as innocent as the babe unborn, and probably of a similar embryonic origin.

Mr. Shattock, in a very valuable note on these tumours which he has kindly sent to me, suggests that the cell-nests may be the result of interstitial pressure. He has found them in one of these tumours removed from the hard palate of a patient by the late Mr. Mason.

With regard to the important case published by Sir William MacCormac in the Pathological Society's Transactions for 1886,

[1] Compare the case of "chondroma of the upper lip," published by Dr. Robinson in the American Medical Association's Journal, September 1886. Patient was a man of 36: growth of two years' duration. "It was 1 inch long by $\frac{3}{4}$ inch diameter; it was egg-shaped, sharply limited, somewhat encapsuled, and nourished by a small artery entering at the base. The skin and the mucous membrane were freely moveable over the tumour. It consisted of embryonic, glandular, and connective tissue. There were several islands of cartilage, the largest being in the central part of the tumour. All varieties of normal cartilage were met with—hyaline, fibrous, and reticular, and also the variety met with in the heads of cephalopods, namely, cartilage with branched cells."

and at that time called by Mr. Shattock "carcinoma myxomatodes," it is probable, as he himself now thinks, that this also was of the same kind. It was encapsuled, and occurred in a woman of 35. "The tumour consists of hyaline connective tissue traversed by an irregularly branching network of epithelial cells. The relative proportion of these two constituents varies in different parts. In some the cells are in considerable groups, everywhere devoid of lumen; in others the hyaline connective tissue stroma is in the larger proportion, the cell columns being narrow, and often tapering off to the tenuity of a single cell. These latter parts are closely like some forms of cylindroma. The stroma of the tumour is in other spots myxomatous, the cell groups ramifying through the mucous tissue."

Treatment.—In nearly all the cases here collected, enucleation was found to be not only possible, but easy. On several occasions, those who have recorded these cases were surprised at the quickness and ease with which they enucleated the growths. As regards an anæsthetic, cocain has been used with success; but it should be injected under the mucous membrane which covers the growth, and not only painted or sprayed over it. Cocain is helpful, not only as an anæsthetic, but also as a constrictor of the blood-vessels. As regards the operation, it seems better to incise the mucous membrane over the tumour than to attempt to scratch through it. It is important not to wound the growth itself. Any bleeding may be stopped by continued pressure. In enucleation, it has been found advantageous, if the growth is in the soft palate, for the surgeon to put his finger up behind the soft palate, and so to push the tumour forward and hold it steady. It is not easy to see why Mr. Syme, in Case 19, did not simply enucleate the tumour. But the most extraordinary treatment is that recorded by M. Dubrueil in the Gaz. Med. de Paris, 1883. A woman, aged 38, had a hard growth in the left half of her soft palate; the mucous membrane over it was normal and not adherent; there were no enlarged glands. As an incision over the growth was followed by alarming bleeding, he left it half enucleated, and tied the common carotid. An hour and a half later he was told that she was again bleeding. Though he did not find her actually bleeding to any serious extent, he now put two more ligatures on the common carotid, still leaving the tumour loosened and half shelled-out; he also ligatured the external carotid, the internal carotid, the superior thyroid, two veins, and probably also the vagus nerve; at least she had symptoms attributed to "bruising" of the nerve. The bleeding came, he says, from very large vessels going to the tumour; it was partly controlled by pressure on the carotid. He left the tumour to slough out.

Sarcomata.

Though it is impossible to draw a clear line between true sarcoma of the palate and such mixed growths as "cystic adenosarcoma" and "adenomyxoma," and again between these mixed growths and the "adenomata;" yet the sarcomata of the palate are a well-marked group. They are more rare than the innocent tumours; they occur equally in men and in women, and more often in the soft palate than in the hard.

As regards the age at which they occur, if we leave out Case 10, which indeed may have been in other ways exceptional, the average age when the growths were first observed was over 40. The average duration of each tumour before surgical aid was sought was two years, if we except one case where the tumour began to grow rapidly after many years lying quiet. Here we have two clear differences between the "adenomata" and the sarcomata.

As regards structure, the growths were mostly round-celled.

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
1	Macleod, Glasg. Med. Journ. xiii. 240.	F. 53	Two years ago she had some defect in her speech. The doctor found a growth in her throat, and lanced it: only blood came. The growth increased, and she now has dysphonia, dysphagia, and dyspnœa. Nostrils always quite free.	A large tumour, soft and painless, occupies the back of the throat: it seems to grow from the soft palate, and has adhered to the pharynx on the left side. There is a painless, soft, moveable gland at angle of jaw.	Preliminary tracheotomy; then jaw was divided, tongue drawn forward, and sponge put in larynx. An incision was made over the tumour, and it was very easily removed with the fingers. Very little blood was lost.	Round-celled sarcoma, with small amount of intercellular substance.	Next day slight congestion of lungs; great distress from the tube; flatulence. Next day exhaustion and death. The tube should have been taken out at once (*Macleod*).
2	Heath, Inj. and Dis. of Jaws, p. 249.	F. 48	Since childhood a small lump on the hard palate. Two years ago this began to grow steadily, causing dysphonia.	There is a lobed elastic growth, the size of a horse-chestnut, in the left half of the hard palate, extending over the middle line. It moves slightly on the bone. Mucous membrane is normal, and not adherent.	It was incised, and easily shelled-out from a distinct capsule, which was afterward removed with the fingers. A bit of hard palate was left bare, and this afterward was exfoliated.	Small round-celled sarcoma.	
3	Bartleet, B. M. J., 1878, ii. 921.	M. 32	Noticed one year. Very little pain. Had grown steadily.	There is a tumour firmly attached to posterior two-thirds of right half of hard palate. It is	The muco-periosteum was incised all round down to bone, and the	Sarcomatous, consisting of small cells, mostly spherical, lying	The tumour was first punctured, to see if it was fluid.

				nearly globular, and elastic almost to fluctuation.	whole mass was forcibly detached with a raspatory.	loosely in a fibrous matrix.	
4	Foulis, *ibid.*, p. 555.	M. 30	Two years' duration. Very little pain; no cough. Dysphagia. Tumour is scarred from previous use of caustics.	There is a tumour the size of a hen's egg firmly sessile in the right half of the soft palate. Its exact limits are ill-defined. It extends upward and outward, and is prolonged into the region of the tonsil. No enlarged glands.	Laryngotomy was performed, and a sponge put in the fauces. The jaw was divided at the angle, and the lingual nerve was divided. The tumour was now freely exposed; and was carefully dissected out. A large vessel at the lower end of the growth bled freely.	Round-celled sarcoma.	Recovery. The tube was removed immediately after the operation. No recurrence eight months later.
5	Coll. Surg. Mus. 2284.	F. 35	Four years' duration.	Tumour $\frac{1}{2}$ inch diameter.	... ...	Round-celled sarcoma.	
6	S. Paget.	M. 60	Two years' duration. Six months' dysphagia: no dyspnœa.	There is a large tumour, about $1\frac{1}{2}$ inch diameter, occupying the right half of the soft palate, and growing forward over the hard palate: it is soft, and elastic almost to fluctuation. Mucous membrane moveable and normal. No glands.	An incision was made over the tumour, the mucous membrane stripped off, and tumour enucleated easily. Free bleeding from incision, stopped by pressure.	Mixed-celled sarcoma, with marked fibrillation of stroma.	Recovery. The tumour was first punctured, to see if it was fluid. It was well encapsuled, and had no attachments. Palate bone felt quite healthy.

No.	Reference.	Sex and Age.	History.	Tumour.	Operation.	Structure.	Remarks.
7	Treves, Path. Trans. 1885.	M. 68	Thirty-seven years ago a similar growth was removed from same spot, and he was warned against recurrence. Present growth is of eight months' duration; it ulcerated five months ago, and has grown very rapidly of late. No pain.	There is a growth in the left half of the soft palate the size of a large walnut, and 2 inches in circumference; there is a superficial ulcer on it ½ inch in diameter. Mucous membrane not adherent. No enlarged glands. Hard palate normal.	The common carotid was ligatured, and the growth, with the left half of the soft palate, was removed with the knife and the actual cautery.	Faintly encapsuled; pinkish grey on section, and fleshy and homogeneous. An "alveolar sarcoma."	Rapid recovery.
8	Duncanson, Med. Chir. Soc. Edin. 1884–85, p. 41.	...	... ...	Tumour of the hard palate.	Removed after the parts had been well painted with cocain 20 per cent. solution.	A round-celled sarcoma, with myxomatous degeneration.	No pain was felt till the end of the operation, when he felt some pain as the "root" of the tumour was cut.
9	Desprès, Soc. Anat. 1874, ix. 577.	F. 53	Fifteen years' duration.	There is a growth the size of a hen's egg in the left half of the soft palate; it is ovoid in shape, and bossed; fluctuation can be felt where it is most prominent.	It was completely encapsuled, and divided transversely into two nearly equal parts by a plane of fibrous tissue continuous with the capsule. The upper half consisted of a cyst the size of a nut, filled with dark brown fluid, containing granular corpuscles, degenerate fibrin, Gluge's cells, and debris; its walls were covered by rounded masses of soft embryonic tissue. The lower half was made up of smaller similar cysts. "Not an adenoma, but a fibroma which has become sarcomatous."		

10	Heath, Inj. and Dis. of Jaws, p. 253.	Child of 7		A circumscribed growth in the soft palate, presenting almost precisely similar appearances to the innocent tumour described on p. 336 (No. 15).	"Upon cutting into the growth, it proved to be a sarcoma with extensive attachments, which did not admit of removal."	The growth steadily increased, and destroyed life in six months. "Looking back at these two cases, I find it impossible to give any symptom by which they might have been distinguished" (*Heath*).	
11	Treves, Lancet, Nov. 1886.	F. 48	Almost edentulous. For four years she has worn a "false palate," which irritated the front and right side of the hard palate near the alveolus. The tumour was, when first seen, the size of a pea: it has grown rapidly, and has given her severe pain.	A flattened swelling, covered by natural mucous membrane, but very black, or rather mottled in appearance, extending over soft and hard palate.	With chisel and mallet the portion of hard palate containing the tumour was successfully removed.	A large spindle-celled sarcoma, growing from the periosteum.	Recurrence after some months. Note the severe pain: was it due to the periosteum being involved? Is this pigmentation a reversion to the pigmentation of the palates of animals?
12	Gussenbauer, Centralbl. f. Laryng., Nov. 1886, p. 171.	...	Four years previously, first operation: removal of tumour with thermo-cautery and raspatory.	Melanotic sarcoma, extending over soft and hard palate.	Removal of velum and of greater part of hard palate (chisel and mallet), also of both tonsils and part of the pharynx. Free hæmorrhage.	...	The wound healed, and the patient can swallow and speak fairly well (Prag. Med. Wochenschr., 9, 1886).

Remarks.—These tumours differ from the innocent tumours clinically in not occurring at puberty and in growing more quickly. It is important to observe that some of these sarcomata are well encapsuled, and may be enucleated without difficulty.

Case 7, called "alveolar sarcoma," may be considered doubtful microscopically, as Sir W. MacCormac observes that it presented some marked similarity to what the microscope showed in his own case. Its history is curiously like that of Mr. Heath's Case 2.

Despres' case of intracystic sarcoma may be contrasted with Mr. Bryant's polycystic tumour, page 319.

A study of these cases of sarcoma, and of the cases of true cancer which follow, suggests that it is a bad thing if a tumour of the palate extends downward into the region of the tonsil. Such growths are apt to be ill-defined, non-encapsuled. But if the growth advances forward, lying *in* the soft palate and *on* the hard palate, or advances not outward toward the tonsil, but inward over the middle line, then it is likely to be circumscribed and to shell-out.

Treatment.—The uselessness of caustics (see page 329) is shown by Case 4. As regards removal, there seems a fair chance that a sarcoma of the palate may be simply enucleated, if it is not very large, and if it confines itself to the palate, not invading the pharynx and tonsil.

It is hardly possible[1] to say beforehand whether a given tumour of the palate is innocent ("adenoma"), or sarcomatous, or malignant (medullary cancer). But looking at the fact that palatine tumours, taken generally, are circumscribed and moveable growths; and looking at the grave additional risk often involved in tracheotomy,[2] ligature of the carotid, division of the jaw or cheek, &c., especially if the patient be over forty, the surgeon is justified, if the tumour be not very large, not of rapid growth, and not adherent to the tonsil or pharynx, in attempting enucleation without previous tracheotomy or ligature of the carotid.

If preliminary tracheotomy is done, the tube should be removed at once. Dr. Macleod's case may be contrasted in this respect with Dr. Peters' three cases of pharyngeal myxosarcoma. Laryngotomy was done in each, and the tube was taken out at once:

[1] Mr. Heath points out that the history and duration of the growth may help the surgeon to make a diagnosis. But Cases 14, 22, 23, and 28 among the "adenomata" had a history more like that of a malignant growth; and it appears that surgeons have been more often surprised by tumours of the palate shelling-out easily when they were expected to adhere, than by their adhering when they were expected to shell-out.

[2] "It appeared to me hardly advisable to increase the danger by opening his trachea. The risk of apnœa is very slight: only a possibility of danger."—*Mr. Langton's Case*, p. 352.

all recovered (N. Y. Med. Rec. xviii. 565). As regards the tube to be used, whether Hahn's or Trendelenberg's, the recent debate at the Clinical Society on excision of the larynx seemed to show that Hahn's is to be preferred, since Trendelenberg's may cause spasm when its bag is inflated.

Carcinomata.

The true cancers of the palate, happily rare, are of two kinds: one, like the cancers of the lip and tongue, which begins in irritation of the mucous membrane; the other, like the medullary cancers elsewhere, which begins as a solid growth underneath the mucous membrane.

The first kind often begins in the gums, and invades the palate secondarily; these should therefore be classed with tumours of the gums, and not be considered here. But Brissaud [1] gives a case of a man of 45, a great smoker, in whom malignant ulceration of the palate followed psoriasis of fifteen years' duration; Birkett [2] gives another; and to these may be added the case on page 329.

The second kind of true cancer of the palate, medullary (?) cancer, is very rare. Three cases follow. All were old folk. In all, the glands at the angle of the jaw were diseased; in all, the disease had pushed rapidly outward, invading the pharynx and the tonsil. Rapid recurrence, and deposits in the lungs and elsewhere, are noted in two cases. These tumours grow very quickly, and form adhesions far and wide; they do not arise from the bone.

1. A woman, age 53. Disease noticed one year. She has a tumour connected inseparably with her hard and soft palate, and lying in front of the right tonsil. It is smooth, glossy, pale red, and firm; ulcerated toward the middle line and posteriorly. There are several enlarged, hard, moveable glands at the angle of the jaw. She has great emaciation, with swollen abdomen, pain in right side, much dirty greyish expectoration; she sleeps sitting.

No operation possible. Death from pleurisy. Disease "distinctly cancerous." Deposits in lungs, trachea, and stomach.—*Mr. Shaw, Path. Trans.*, vi.

2. A man, age 59. Disease noticed three months. He has a tumour in the left half of his soft palate, the size of a large walnut, pushing down between the pillars of the fauces; soft, almost fluctuating. The mucous membrane over it is slightly congested, and a few large veins can be seen in it. No glands are felt at the angle of the jaw.

[1] Bull. Soc. Anat., 1872, p. 608.
[2] Sir W. MacCormac's paper, Path. Trans., 1886.

He has difficulty of breathing, and can only swallow fluids.

Mr. Langton made an incision over it, which was followed by profuse hæmorrhage. The growth was easily enucleated, except toward the horizontal plate, where its attachment was more firm. The wound was sutured, as in Sir W. MacCormac's case.

Recurrence six weeks after the operation. Death three weeks later.

Post-mortem.—A mass in the palate the size of a Tangerine orange; not found to be connected with the bone. Soft, lobulated, medullary cancer. Cervical and mediastinal glands infiltrated, and cancerous deposits over both lungs.—*Mr. Langton, Clin. Trans.*, iii.

3. A man, age 56. Disease noticed two months. He has a tumour in the right half of his soft palate the size of a chestnut; it has grown to touch the pharynx; it is moveable, firm, ill-defined. Mr. Treves ligatured the common carotid and removed the right half of the soft palate, tumour and all; also an enlarged gland from the angle of the jaw. Recovery.

The growth was "a spheroidal-celled carcinoma," part encapsuled, part not; an "adenoid carcinoma" (Eve).—*Mr. Treves, Path. Trans.*, 1885.

Conclusions.

1. Tumours of the palate are usually circumscribed, encapsuled, and easily to be removed. They grow usually in the soft palate, and very rarely from the bone. Some of them present very many points of likeness to tumours of the parotid region; and, like them, are probably of embryonic origin.

2. Rapid growth, infiltration, extension outward and downward, advanced age in the patient, enlarged lymphatic glands, glossy smoothness and adhesion of the mucous membrane over the tumour,—all these are bad signs.

3. No tumour of the palate should be left to itself, but preliminary operations are only necessary in very bad cases.

PROCEEDINGS

OF

THE ABERNETHIAN SOCIETY

FOR WINTER SESSION 1885–86.

OFFICERS.

Presidents . . .	Dr. E. W. Roughton and Mr. W. T. H. Spicer.
Vice-Presidents . .	Mr. C. P. Crouch and Mr. Arnold Lyndon.
Treasurer . . .	Mr. Savory.
Secretaries . . .	Mr. F. W. Andrewes and Mr. W. T. Gardner.
Committeemen . .	Mr. J. G. E. Colby and Mr. Farrar.

October 8.

The First General Meeting was held in the Anatomical Theatre. Mr. W. Morrant Baker, F.R.C.S., delivered the Introductory Address, his subject being 'The Two Foundations of St. Bartholomew's Hospital.'

The address has been published *in extenso*.

October 15.

Mr. Arnold Lyndon showed microscopic specimens of moles, warts, melanotic sarcomas, and Negro's skin, illustrating cutaneous pigmentation.

Dr. F. H. Wigmore read a paper on 'Certain Diseases of Infancy, Puberty, and Maturity.'

He pointed out the convulsive character of some of the diseases of infancy, and these he considered due to an exhaustion of nervous energy arising from various causes, but usually from deficient nourishment. In laryngismus stridulus, the spasm occurs during the period of dentition, and appears to depend either upon undue rapidity, or upon undue prolongation of that process.

In either case there is an undue expenditure of nervous energy, tending to produce a condition of unstable equilibrium, in which sudden shock, such as fright, may give rise to an explosive liberation of nervous energy, resulting in spasm of the glottis so intense as sometimes to produce death from asphyxia. Laryngismus occurs in children who are either unnaturally fat or unusually thin. Cod-liver oil had, in Dr. Wigmore's experience, been uniformly successful in curing not only this disorder, but others of a like nature. A distinction was to be drawn between laryngismus stridulus and spasmodic croup.

Dr. Wigmore then pointed out the close connection between the generative organs at puberty and the rest of the body, a connection which might explain those vague aches and pains which accompany disorders of the sexual functions and sexual excesses. In such cases bromide of potash and other anodynes are of value, but perchloride of iron is even more useful.

Amongst the diseases of maturity Dr. Wigmore spoke chiefly of dyspepsia and gout, laying special stress on their prophylactic treatment by appropriate diet and daily exercise.

October 22.

Mr. Arnold Lyndon showed microscopic specimens of molluscum contagiosum and of Paget's eczema of the nipple.

Mr. F. W. Edridge Green read a paper on 'Memory, Artificial and Natural,' which has been published by the author.

October 29.

Dr. E. W. Roughton showed a specimen of retained fragment of placenta.

Dr. A. M. Jackson showed a specimen of dissecting aneurysm of the base of the heart, from a woman who had died suddenly at the Surrey County Lunatic Asylum

Mr. L. Drage read a paper on 'Tracheotomy.'

Having given a short history of the operation, he described the various steps in its performance and showed the instruments which were used. He did not approve of the administration of an anæsthetic in children as a rule, though he thought it advisable in the case of adults. He laid stress on the importance of a good light and the necessity of imposing silence on bystanders. Amongst other points, he touched on the comparative unimportance of venous hæmorrhage, the dangers of retracting the margins of the wound too much, and the advisability of feathering the trachea and larynx before inserting the tube.

There need be no hurry in resorting to artificial respiration, as after a few deep inspirations a state of apnœa ensues. He strongly condemned the practice of sucking the tube, not only on surgical, but also on moral grounds.

In the after treatment of tracheotomy Mr. Drage advocated Dr. Bullar's method of feeding through the nose with a soft tube and funnel. He was in favour of an early operation in diphtheria, and a late one in œdema glottidis from scalds.

November 5.

Mr. Berry opened the surgical discussion on 'Hæmorrhage.'

Having defined hæmorrhage as 'an escape of blood from some part of the circulatory system,' he condemned the common division into arterial, venous, and capillary; for clinically bleeding is usually from more than one of these sources. He excluded from debate those forms of hæmorrhage which lie within the provinces of the physician and obstetrician. The pathology of hæmorrhage, and of Nature's efforts to arrest it were briefly touched on, and the ordinary modes of death from hæmorrhage described. He suggested hæmophilia as a subject for discussion, stating that in his opinion its cause lay rather in a lack of coagulability in the blood, than in any defect in the vascular walls. Secondary hæmorrhage is always due to some defect in the healing process, and is to be carefully distinguished from recurrent hæmorrhage; the use of Esmarch's bandage is a possible cause of the latter. He referred to the difficulty which often occurs in diagnosing the effects of hæmorrhage from those of shock, and also in ascertaining in some cases whether the bleeding comes mainly from an artery or a vein.

He then passed on to the treatment of hæmorrhage, pointing out that we can do no more than assist Nature in her normal processes of repair. In hæmophilia, saline purgatives, by diminishing the fluidity of the blood, form the most valuable means of treatment, and strict attention to diet may attain a similar end. He condemned most internal styptics, except opium, ergot, and matico; the latter is specially useful in hæmorrhage from the urinary tract. Local styptics he considered far inferior to pressure as a means of controlling hæmorrhage; perchloride of iron in particular is used much too frequently, and is often productive of harm, retarding the healing of wounds and leading to thrombosis, embolism, and pyæmia, especially when employed in the neighbourhood of large veins. The galvanic and actual cauteries, again, though often useful, increase the liability to secondary hæmorrhage; they may be necessary, however, in stopping the bleeding

from the cut surface of a bone. For tying a bleeding vessel he preferred catgut to silk ligatures, except in the case of the tongue; and acupressure may be very useful—as in stopping hæmorrhage from the umbilicus of newly born children. In discussing the after treatment of hæmorrhage he said that neither the amount of blood lost nor the consequent pallor were necessarily a measure of the danger; extreme restlessness and irregularity of the pulse are very bad signs. Transfusion of blood he thought rarely useful in the after treatment of hæmorrhage, however valuable it may be in cases of pernicious anæmia. The injection of fresh milk or saline solution would probably be equally effective and less dangerous.

Mr. Berry showed two forms of apparatus for transfusion.

November 12.

Mr. C. B. Innes read a paper on 'Variola.'

He stated that before the days of vaccination small-pox caused from 6 to 12 per cent. of the total number of deaths, and even at the present time it is far from rare. Vaccination thoroughly performed in infancy and repeated at puberty reduces it from a terrible and widespread pestilence to a rare and trifling malady. The failure of revaccination to take does not prove a permanent immunity from small-pox, and the operation should certainly be repeated.

Variola may run a regular course, or be modified on the one hand into a slight affection, on the other into a very malignant form.

The invasion is marked by high fever, headache, backache, vomiting, and epigastric pain, and sometimes by rashes of different kinds. These may be erythematous and resemble those of scarlet fever or measles, or they may be petechial. The latter form, which occurs chiefly on the hypogastrium and groins, is characteristic of small-pox. The true eruption follows generally on the third day: shotty papules form, which become vesicular on the fifth day, and pustular on or about the eighth day. The number of papules varies much: their pustulation is accompanied by bright redness and great swelling of the skin. Drying begins about the tenth day. The mucous membranes of the mouth, pharynx, and larynx are also attacked. The fever, pain, and sickness of the stage of invasion subside more or less as the eruption appears, but the latter soon causes burning and tingling pains in the fingers and toes, and often great dysphagia. Violent delirium is not unfrequent. As pustulation occurs the secondary fever sets in: it is of a remittent type, lasts from three or four days to a fortnight, and seldom runs higher than 104° F.

In modified small-pox the eruption may simply run a rapid course, or may abort in the vesicular, or even in the papular stage. There may be only very few papules or sometimes none at all. Secondary fever is generally absent and complications are rare.

In malignant cases hæmorrhage occurs into the pocks, the skin and cellular tissue, and from mucous membranes. Amongst the complications of small-pox, bronchitis and pneumonia are the most important, and are often the chief cause of death. Laryngitis, pleurisy, and pericarditis also occur. Conjunctivitis is common, and keratitis going on to perforation may ensue. Boils are common: erysipelas, gangrene, and pyæmia are much more rare.

In the treatment of variola good nursing is most important. Headache may be relieved by sponging the forehead with very hot water, and backache by a hot mustard poultice. The patient must be induced to take his food, and sleep should be procured if possible. Stimulants are often indicated. A free supply of fresh air is essential, but draughts should be avoided, and a temperature of from 60° to 65° F. maintained: lung complications may thus be avoided. The skin, or at any rate that of the face, should be oiled. Gargles of chlorate of potash and iron perchloride are useful. Delirium generally yields to chloral and potassium bromide. For pains in the fingers and toes the hands and feet should be done up in moist cotton-wool and enveloped in gutta-percha tissue.

November 19.

Mr. Crouch showed a case of post-hemiplegic chorea with spastic contraction of the muscles of the left fore-arm and hand. Mr. Farrar showed a case of congenital absence of both thumbs in a baby.

Mr. Knight showed a specimen from the dissecting-room in which the left vertebral artery arose directly from the arch of the aorta, between the left carotid and subclavian arteries.

Dr. E. W. Roughton read a paper on 'The Experiences of a Midwifery Assistant.'

He related several cases of interest which had occurred in Martha Ward during his term of office as House-Physician there, and insisted on the value of the temperature chart in diagnosis. Amongst others he mentioned a case of uterine fibroid resembling in its clinical features retroversion of the gravid uterus, and also two cases of fibroid complicated by retro-uterine hæmatocele. He dwelt on the diagnosis of inflamed fibroid—a condition which does not receive that amount of attention in text-books which, from its importance, it deserves; and mentioned points of interest in the diagnosis of ovarian cysts, adducing some cases in which errors of diagnosis had unavoidably been made.

In discussing treatment in general, he was convinced that hygienic measures, such as rest, fresh air, good food, and good nursing, were far more important than the administration of drugs. The results of out-patient treatment were, for this reason, very unsatisfactory when compared with those of in-patient treatment.

He referred to the 'mechanical system of uterine pathology,' which he considered to be the curse of gynæcology. In conclusion he said a few words about the Maternity Department at St. Bartholomew's. During his term of office he had had charge of over a thousand cases, with only a single death: he gave amusing examples of mistakes made by midwifery clerks in their earlier experiences.

November 26.

Mr. F. W. Andrewes read a paper on 'Puerperal Eclampsia.'

He related two cases which had occurred at Queen Charlotte's Hospital. One in a girl of fifteen terminated fatally within twenty-four hours, after more than fifty eclamptic attacks. Acute fatty degeneration of the kidneys was found post-mortem; microscopic specimens of the kidneys were exhibited. The other case, which occurred in a girl of nineteen, terminated favourably after somewhat vigorous treatment. Both were cases of eclampsia coming on several hours after parturition, and in both the urine was loaded with albumin; in the case which ended in recovery the albumin disappeared in about a week. The two cases were contrasted in their various details, and their chief points of interest discussed.

In treating of the pathology of puerperal eclampsia, Mr. Andrewes defended the theory which assigns a uræmic origin to the convulsions. He objected to the Traube-Rosenstein theory, on the ground that anæmia of the brain cannot be secondary to œdema, for no transudation fluid can exercise pressure on the very vessels from which it is transuded, or the transudation would not take place. He mentioned Claude Bernard's experiments on uræmia, and showed their bearing on the treatment of eclampsia.

As regards treatment, he mentioned that large doses of chloral and potassium bromide (3i of each) had been well borne in one of the two cases he had recounted, and had promptly checked the convulsions. These drugs with chloroform, and in rare cases morphia (a single dose only), were the most reliable, combined with free purging, sweating, and dry cupping over the loins. Pilocarpin is of doubtful utility, and venesection necessary in exceptional cases only. In the prophylaxis of a threatened attack, free purging is indicated—preferably by the acid tartrate of potash.

December 3.

House-Physicians' evening.

Mr. Drage showed a specimen of cerebral tumour gliomatous in nature; death had occurred from septic pneumonia shortly after parturition.

The House-Physicians then introduced the subject of 'Diarrhœa.'

Dr. Habershon insisted on the importance of a thorough examination of the motions as a guide in diagnosis. He enumerated the points likely to be of value for such a purpose, such as colour, fluidity, odour, and the presence of blood, mucus, undigested matter, or shreds and sloughs of mucous membrane. Microscopic examination is often of value. Cases were recounted in which important diagnoses had been made by attention to these details; for example, between acute dysentery and typhoid, and between ulcerative endocarditis and typhoid. He next enumerated the various causes of diarrhœa; such as exposure to cold and damp leading to congestion of the internal viscera; the irritation of improper and indigestible food. In patients exhausted by want of food, or as a consequence of chronic disease, slight irregularity in diet may set up distressing diarrhœa, while any pathological changes in the intestinal wall are intensified in their effect by the exhaustion of the patient. Some diarrhœas may be traced to the condition of the blood, as in pyæmia and small-pox, or in the diarrhœa of the dissecting-room. Others are due to a passive congestion of the intestine, as in morbus cordis and cirrhosis of the liver, or to œdema of the intestine, as in Bright's disease. More frequently there is definite ulceration, as in dysentery, typhoid, and tuberculosis, or there is amyloid degeneration, or there may be malignant disease or piles, or ulceration of the rectum.

Dr. Styan mentioned constipation as a cause of diarrhœa, and related cases which illustrated this condition, drawing an analogy between them and cases of incontinence of urine due to urethral stricture. The diarrhœa in these cases might be due to the irritation from scybala, or to over-distension of the gut above the scybala. He then discussed infantile diarrhœa and insisted on the importance of looking to the condition of the mother as well as to that of the child, especially as to the character of her milk, which in weakly women may be too thin, or in plethoric robust women too rich. The main treatment consists in proper diet at proper intervals, with perfect cleanliness, warmth, and in bad cases stimulants. Grey powders are the best drug in these cases.

Mr. Gow discussed the diarrhœa attendant on typhlitis; it occurs in the chronic and not in the acute form of the disease,

and is chiefly remittent in type and very obstinate, persisting in some cases for as long as ten years. Perfect rest in bed is the essential point in the treatment. He expressed his disbelief in the 'typical typhoid stool,' which he regarded as dependent mainly on the nature of the diet. He then mentioned the diarrhœa which is apt to attend the later stages of valvular disease of the heart; it is due to slight inflammation of the intestinal mucous membrane, caused by the venous congestion which results from failure of compensation. Such diarrhœa is of very serious import, since intestinal irritation is a powerful cardiac depressant. Treatment of the gastro-enteric symptoms in these cases may prove of great service.

Dr. A. E. Garrod confined his attention mainly to the treatment of different forms of diarrhœa. The simple diarrhœa met with among casualty patients in the Surgery he treated with castor oil and opium, followed if necessary by aromatic chalk powder, or bismuth and catechu. When accompanied by collapse and cramps, brandy, opium, and hot bottles are indicated with an opium poultice to the abdomen. In typhoid diarrhœa he recommended opium and starch enemata, and alum whey, with mutton essence instead of beef-tea. Silver nitrate enemata are of great use in dysenteric diarrhœa and in that due to tubercular ulceration. In amyloid disease the diarrhœa is very intractable, and astringents are of no avail; starch and opium enemata are the most useful. In chronic diarrhœa the vegetable astringents are chiefly to be relied on.

December 10.

Dr. Pruen read a paper on 'Alcohol.'

Having remarked on the importance of an accurate knowledge of the action of alcohol in health and disease, and deprecated the little attention paid to it in medical education, he proceeded to deny that alcohol had any claim to the title of a stimulant. He considered that its action on the heart, in moderate doses, is a setting free from external disturbing influences, causing the beats to fall to normal if they had been raised in frequency by any morbid change elsewhere, or to rise to normal if depressed by any external cause. Such action is not stimulation. He further maintained that alcohol did not increase the frequency of the heart's beats in health, and that, in large doses, not only the extrinsic, but also the intrinsic mechanism of the heart was paralysed.

He considered the evidence that alcohol was a direct food, or even an indirect one, by reducing destructive metabolism, as faulty. Its use in health he regarded as unnecessary, though he

admitted that such use, if not exceeding an ounce and a half of absolute alcohol per diem, was not followed by any appreciably injurious results. From the economical and social side of the question its use as a beverage was certainly to be deplored.

In disease he maintained that alcohol was ineffectual as an antipyretic unless given in dangerous doses. In typhoid and pneumonia he had not found it useful, and occasionally the restlessness it caused was absolutely injurious. In septicæmia and snake-bite he should expect to find it useful, and in some cases it appeared to assist digestion when other drugs failed. Finally, he stated that he considered it the duty of every medical man to investigate the question personally by observation and experiment, to look after the water supply of the town in which he lived, especially in the poorer districts, in order to lessen the temptation to indulgence in alcoholic drinks, to use his influence in limiting the number of public-houses, and lastly, to be himself an abstainer, if by so doing he could encourage more temperate habits among his poorer patients.

January 14.

Mr. J. G. E. Colby read a paper on 'Hæmoglobin and its Derivatives.' He referred to its distribution in the animal kingdom, its crystallisation, and some methods of obtaining crystals. He discussed the presence of iron in hæmoglobin, and its probable source in the organic compounds of iron present in food. The shape of the hæmoglobin crystals he considered probably due to the proteid element, as most crystals can be decolorised without changing their shape. He then alluded to the various derivative bodies. In detecting small quantities of blood, the absorption-spectrum of hæmochromogen is of great value. He discussed the relations of other derivatives in bile, fæces, and urine, and the possibility of some of the urinary pigments being derived directly from hæmatin without the intervention of bile pigments. Mention was made of three bile pigments—bilirubin, biliverdin, and urobilin, the latter being alone present in the mouse. All finally end in choletelin, the normal pigment of urine.

January 21.

Dr. W. T. H. Spicer read a paper on 'Hereditary Influences.' Having reviewed the evidences of man's variability, he enumerated some of its causes, such as altered conditions of life and the effects of use and disuse of parts, as shown by the changes which have taken place in the eye and the jaw. The results of arrested development and reversion were illustrated by microcephalous idiots, and

by supernumerary fingers and toes, which have been shown to be more common in the remains of ancient races and in the lower existing types of mankind. He touched on the mental and moral characters of man, tracing out the development of the moral sense, and further discussed some of the laws which govern heredity.

Passing on to disease, he dwelt on the inheritance of gout, syphilis, scrofula, and other affections, and discussed at some length the manner of their transmission and the theories which explain it. He further touched on hereditary longevity, colour-blindness, neuroses, and hæmophilia, and mentioned Cohnheim's theory of the causation of tumours and the evolution of these growths from simple forms. The importance of the study of constitutional tendencies was strongly insisted on, and the paper concluded with an account of the effects of civilisation on the human race.

January 28.

Mr. Stephen Paget showed three cases:—

(1.) A boy, aged 15, with a primary syphilitic sore on the cheek, with marked secondary glandular enlargements all over the body.

(2.) An infant with multiple nævi.

(3.) Two children, aged 10 and 12 respectively, who had previously suffered from disease of the upper epiphysis of the humerus, which had resulted in permanent shortening and wasting of the limb, with considerable anchylosis of the shoulder-joint.

Mr. Wells read a paper on 'Rupture of the Urethra and its Consequences.'

He confined his remarks chiefly to the injury as it affected the male, and cited cases which had been under his own care. He thought rupture a bad term, and would prefer calling it 'laceration of the urethra.' This, he showed, might be due to injuries from without or within the urethra. The former are necessarily accidental, being due to violence, wounds from sharp instruments, or gunshot wounds. He spoke on each of these heads, and gave the appropriate treatment.

Injuries of the urethra inflicted from its mucous surface he divided into those caused by foreign bodies and those caused by instruments. Under the first he included calculi and pieces of bone passing from the bladder through the urethra; under the second, the passage of sounds, catheters, and dilators. He then spoke of the consequences of laceration of the urethra and the appropriate treatment of traumatic stricture, extravasation of urine, urinary abscess, and urinary fistulæ.

February 4.

Dr. W. J. Collins opened the medical discussion, the subject being the title of 'Doctor,'

He said that this Society had not yet passed its judgment on this question, which was now exciting so much comment. He briefly traced the history of the title, showing that it first acquired the importance of a rank at the University of Salerno in the twelfth century. At present it is ambiguous, being on the one hand an academical distinction, and on the other a trade-mark. He next turned to the proposition of conferring the title on medical students in London, and read the conclusions of the Committee appointed by the British Medical Association to report on the matter. Three propositions had been made: (1.) That a teaching university should be started in London; (2.) that the medical teaching in London should be focussed and centrallised; (3.) that the Royal College of Physicians and the Royal College of Surgeons should be allowed to confer the degree of M.D. on those who had taken the double qualification. He read various opinions of prominent members of the profession on the subject.

Having pointed out how unjustly any alteration in the existing matriculation and preliminary scientific examinations of the London University would affect science and art graduates, he mentioned the various universities in Great Britain which granted the degree of M.D., and discussed the qualifications which each demanded.

Dr. Collins considered that there were five solutions of the question: (1.) To do nothing; (2.) that the London University should lower its standard; (3.) that the Royal Colleges of Physicians and Surgeons should be empowered as a corporation to confer a doctorate; (4.) that these bodies should be empowered to confer a M.D. as a faculty of a future university; (5.) that the present universities should revise their regulations. Durham, for instance, might abolish the condition of residence.

In conclusion, he stated that he regarded the degree of M.D. not as a trade-mark, but as an academical distinction.

In the discussion which followed,

Mr. Reichardt assailed the London University as a mere examining board, and not a teaching and resident institution. He should prefer to reduce the difficulties of the existing M.D. degrees, and was opposed to the examination system. His ideal university was on the German system.

Mr. Farrar considered that nothing need be done, as no grievance existed. He considered residence, and not examinations, as

the important factor in a university career, and was opposed to state interference with the ancient universities.

Mr. Lyndon defended the University of London as demanding a sound practical knowledge. He considered the real grievance to lie in the existence of so many bogus M.D. degrees.

Dr. Wigmore pointed out that while the London degrees were merely of educational significance, those of Oxford and Cambridge were of social value. He considered that if anybody in London is to grant a doctorate, it should be on the combined qualifications of F.R.C.S. and M.R.C.P. Such universities as Durham should, he thought, be suppressed.

Dr. Shore thought the real solution of the question was to improve medical education in London, to take advantage of our clinical education and systematic teaching, and especially to make examinations more practical. The London University must take up a teaching function, and the granting of a doctorate by the College of Physicians would bridge over the difficulties for a time.

Dr. Roughton defended the London University on the ground that it does what it professes to do well. He considered examinations a fair test of knowledge. He thought residence at Oxford and Cambridge good socially, but of no practical advantage.

February 11.

Dr. A. E. Garrod read a paper on 'Hysteria.'

In it he insisted on the importance of regarding hysteria as a real disease, and then passed on to speak of the chief points on which the diagnosis should be based, and dwelt on the danger of mistaking more serious conditions, such as acute tuberculosis, for hysteria. He next proceeded to speak of certain manifestations of the disease which had come under his notice, such as functional aphonia, paraplegia, anæsthesia, contraction of muscles, &c., and insisted on the great importance of early treatment in all forms of the disease, the difficulty of each case being in direct proportion to its duration. He also discussed the devices adopted by hysterical patients to draw attention to themselves.

He advocated a somewhat rigorous line of treatment, including the isolation of the patient from her usual surroundings, the application of electricity, cold shower-baths, &c.

In conclusion he pointed out the immense importance of this disease, seeing the misery which it entails both on patients and their friends.

February 18.

Mr. Owen Lankester read a paper on punctured wounds of arteries.

Having sketched the main difference between arterial and venous hæmorrhage, and pointed out that they were liable to variation, he passed on to the treatment of hæmorrhage from a wounded artery. He then referred to punctured wounds of the palm and sole as forming striking exceptions to the rule to cut down and tie a vessel at the seat of injury. He then passed on to ligature of wounded vessels, pointing out when they should be ligatured and why. Mr. Lankester then spoke of traumatic aneurysm and its treatment, again insisting on pressure. Arterio-venous aneurysm was then mentioned; and finally, two cases were mentioned which had come under his notice, and a third of punctured wound of the femoral artery which had escaped his notice at the time.

February 25.

Mr. C. P. Crouch read a paper entitled 'Bavarian and Similar Splints.'

In it he considered: (1.) The ordinary plaster of Paris splint; (2.) the Bavarian splint, made of plaster of Paris enclosed between two strips of flannel; (3.) that in which gum and chalk is substituted for plaster of Paris. This he regarded as forming an exceedingly light, firm, and easily removable splint; it was, however, liable to become soft after a time, and likely to lose its shape. He thought this was due to the absorption of the perspiration of the skin, and in order to obviate it he recommended that the splint should be perforated, in order to allow a freer access of air, and therefore a freer evaporation.

He mentioned that the silicate of soda splint was very light and firm, but owing to its brittleness it could not be taken off without cracking; he therefore recommended a splint consisting of chalk, silicate solution, and glue, enclosed between two strips of flannel, which he considered equally strong and firm, but less brittle.

Mr. Arnold Lyndon then read a paper on 'The Microscope in Medicine.'

He began by briefly sketching the growth of histology during recent years, and illustrated this particularly by the advances which had been made in the teaching of microscopic pathology at St. Bartholomew's. He dwelt on the diagnosis, prognosis, and treatment of many tumours which come under the notice of surgeons, and quoted in support of the value of microscopic examination cases which had been supposed to be innocent tumours, but which histological examination had shown to be malignant; and, on the other hand, cases of supposed malignant

tumours which had turned out innocent; and again, cases which, though correctly diagnosed as malignant, yet proved to be of a different kind from what had been anticipated,—for instance, rodent ulcer instead of epithelioma.

He pointed out the difficulty which often occurred in distinguishing a carcinoma from a sarcoma under the microscope, and showed that the first element of success lay in a clear idea as to the characters of an epithelial and a connective-tissue cell respectively. The difficulty lies in the fact that often the cells combine the character of the two groups. He discussed the pathology of rodent ulcer at some length, and illustrated by specimens under the microscope the differences between it and epithelioma.

He then passed on to the value of the microscope in medicine proper, showing how the prognosis of Bright's disease might depend on the presence and character of the casts. In cases of calculus, valuable information may be derived from the detection of crystals of uric acid, oxalate, or phosphate of lime, &c., in the urinary deposit. Again, the detection of tubercle bacilli in cases of suspected phthisis may be of very great importance in treatment and prognosis.

He also touched on the value of the microscope in dermatology, specially insisting that only by its use could a case of tinea tonsurans be proved to be cured.

Mr. Lyndon took occasion to condemn emphatically the microscopes provided in the Hospital wards, as altogether worthless for delicate work. He strongly advocated the formation of a small laboratory attached to the operating theatre, in which he considered that a sufficient microscopic examination of any suspected new growth could be made at the time of the operation in the course of ten minutes.

March 4.

House-Surgeons' evening.

The subject selected by the House-Surgeons for discussion was 'Gonorrhœa.'

Mr. Jessop, having alluded to the importance of the treatment of this disease on account of its frequency amongst the out-patients, mentioned that balanitis was liable to be mistaken for gonorrhœa on casual examination. He next discussed the specificity of the disease, advocating the view that it was non-specific, and merely an ordinary inflammation affecting a highly sensitive organ. He briefly traced the course of an attack of gonorrhœa, distinguishing a latent stage, an acute stage, and a stage of subsidence. Finally, he referred to gonorrhœa in females, and men-

tioned the danger of confounding it with an entirely innocent discharge apt to occur in children from a want of cleanliness or presence of threadworms in the rectum.

Mr. Wells went on to speak of the complications of gonorrhœa. He considered balanitis a mere variety rather than a complication. Among complications he included phimosis, paraphimosis, bubo, chordee, hæmorrhage from the urethra, urethral and peri-urethral abscess, retention of urine, prostatitis, inflammation of the neck of the bladder, cystitis, pyelitis, and nephritis. Epididymitis was the most frequent complication. He spoke also of gonorrhœal ophthalmia, sclerotitis, and rheumatism. Lastly, he referred to the complications in the female, stating that the inguinal glands became inflamed only when the urethra itself was affected.

Dr. Wigmore devoted his attention to treatment, insisting on the importance of early treatment during the first stage. In this stage the use of astringents is not of much value. During the second stage he recommended the use of injections of lukewarm water, and internally diuretics, calomel, and opium. The gleety stage may be treated by injections of sulpho-carbolate of zinc with opium, and, if persistent, by catheterisation. For general treatment he relied on rest, cleanliness, hot baths, liquid and bland food, and abstinence from alcohol. Lastly, he spoke of the treatment of the various complications of gonorrhœa.

In chordee he preferred belladonna ointment, morphia suppositories, and applications of cold. For warts he used calomel and oxide of zinc, and if this failed, nitric acid. In gonorrhœal rheumatism ice or hot fomentations should be applied to the joint.

In conclusion, he referred to preventive treatment.

March 11.

Mr. Lyndon showed specimens of myxoma of the parotid gland of a baby and encephaloid carcinoma of the breast.

Mr. Farrar then read a paper on the 'Biography of Anatomy.'

He began by saying that no doubt human anatomy was studied by Hindoo physicians 3000 years before Christ, and stated that the Sanskrit Vedas contained a complete system of anatomy.

Our present knowledge of anatomy, however, dates its commencement from Herophilus and Erasistratus, who, under the protection of two of the Ptolemies, practised dissection on the bodies of criminals at Alexandria in the third century before Christ.

Previously Aristotle and Hippocrates had examined the thoracic and abdominal viscera in the lower animals. The studies of Herophilus and Erasistratus extended over a period of at most forty years, during which considerable progress was made. Galen, who

flourished in the second century of the Christian era, has left a system of anatomy based on careful dissection of the lower animals, but it is evident that he never dissected the human subject. His death ushered in the decadence of anatomy, which lasted till the revival of learning in Europe. From the thirteenth century the practice of human dissection was recognised, but for long no important advance was made. Vesalius first overturned the traditional reverence for Galen, and exposed the errors of his works as applied to the human body. Vesalius was succeeded by his pupil Fallopius. Vidius, Eustachius, and others carried his work forwards; and the discovery of the circulation of the blood by William Harvey definitely established our knowledge of anatomy on a secure basis.

March 18.

Annual General Meeting.

The annual report and financial statement for the year were read and adopted.

The voting for the election of office-bearers for the ensuing year then took place, Messrs. C. H. Hands and R. Gill being elected scrutineers. The results of the poll were as follows:—

Presidents—Dr. Wigmore and Mr. G. E. Murray.

Vice-Presidents—Mr. F. W. Andrewes and Mr. L. Gabriel.

Treasurer—Mr. Savory.

Secretaries—Mr. J. G. E. Colby and Mr. W. Balgarnie.

Committeemen—Mr. J. G. Ogle and Mr. E. J. Moore.

DESCRIPTIVE LIST

OF

SPECIMENS ADDED TO THE MUSEUM

DURING THE YEAR 1886.

SPECIMENS ADDED TO THE MUSEUM

During the Year ending October 1, 1886.

BY

D'ARCY POWER.

SERIES I.

DISEASES OF THE BONES.

17b. The Manubrium and a portion of the Gladiolus of the Sternum, with the costal cartilages attached. The central portion of the bone has been completely absorbed by the pressure of an aneurysm. (In Case E.)

From the dissecting-rooms.

74c. A well-developed adult Femur, showing the deformity produced by osteitis deformans. The shaft of the bone has a marked antero-posterior curvature, and is flattened from before backwards. The lower half of the bone is more affected than the upper portion. The shaft is very considerably thickened, its circumference two inches above the adductor tubercle measuring no less than 6 inches, instead of the 4 or $4\frac{1}{2}$ inches which a normal femur should measure at the same point. The surface of the bone presents the roughened tubercular appearance and the enlarged Haversian canals which are familiar in cases of chronic periostitis. On section, the increase of girth is seen to be due to a deposit of dense ivory-like bone, which is more compact at the periphery than towards the centre. The bone nearest to the medullary canal is porous, as if it were undergoing a process of rarefaction; whilst the medullary canal itself is increased in size and its cancellous tissue is much coarser than usual.

The bone had no history attached. It was found amongst a number of pathological specimens collected in the latter part of the first half of the present century by a medical practitioner in Trowbridge.

See also *Transactions of the Pathological Society*, vol. xxxvii. p. 369.

Presented by G. C. Tayler, Esq., M.D.

74d. The upper portion of a Tibia, showing the deformity produced by osteitis deformans. The bone is characteristically curved, and has undergone very considerable thickening. The thickening is in great measure due to the deposit of dense periosteal bone, and in part to a rarefaction of the existing shaft. This change has been accompanied by an absorption of the walls of the medullary cavity. The portion of bone which has undergone rarefaction presents the same porous appearance as the bone in the preceding case, though the process has proceeded farther; it cuts easily, and the pores are occupied by a soft pinkish material, consisting, as the microscopic sections show, of embryonic medulla. The outer surface of the bone is roughened and the Haversian canals are enlarged.

From a man, aged 74, who died from the effects of prostatic enlargement. There was no evidence of gout or osteo-arthritis. The tibia was the only bone in the body which showed signs of osteitis deformans. (Cf. No. 74a.)

See *Transactions of the Pathological Society*, vol. xxxvii. p. 370.

167a. The lower two-thirds of the left Femur, which has undergone central necrosis. The bone is much thickened, especially at its upper and posterior portion, by a deposit of new osseous material derived from the periosteum; whilst the lower portion of the bone is sclerosed so that the medullary canal is filled up with dense bone. In the upper part of the specimen the shaft has undergone lamellar necrosis. The dead bone has not exfoliated, but is in many places ensheathed by new bone derived from the endosteum and periosteum.

The patient, a boy aged 17, had experienced shooting pains in his left hip for seven months previous to his admission to the Hospital. Shortly after he first felt the pain, he noticed a fulness about the hip accompanied by tenderness, heat, and redness. He kept his bed for three months. On admission, a large tense swelling was found at the upper and inner part of the thigh, and the knee-joint was swollen and tender. Three-quarters of a pint of pus flowed from an incision made into the swelling. The knee-joint was afterwards drained, but amputation through the middle third of the thigh was ultimately performed. At the time of the amputation the medullary canal contained pus in its upper portion. The pus had burrowed behind the semi-membranosus muscle, and had made its way into the knee-joint, but the epiphysis remained healthy.

See *Male Surgical Register*, vol. v. (1885), No. 2840. *Transactions of the Pathological Society*, vol. xxxvii. p. 372.

226b. Part of the Temporal Bone of a child. The mastoid portion is brown and rough; it has undergone necrosis. The periosteum is retracted over the internal surface of the petrous portion, leaving the bone bare.

From a child who died with a cerebral abscess consequent upon the necrosis of the mastoid process. The brain is preserved in Series xxx. No. 2486a.

See *Male Surgical Register*, vol. v. (1885), No. 482.

293a. A portion of the Thorax of an old person, showing the changes which result from osteomalacia. (In Case E.)

From an old female subject brought for dissection.

312a. The Calvaria from a case in which many of the joints were ulcerated in an unusual manner. A little below and behind the right parietal

eminence is a circular ulcerated patch filled with caseating material. The patch closely resembles a gumma, and it was in connection with the subjacent roughened and bare bone. A similar but smaller and firmer mass is situated more anteriorly on the left parietal bone. The membranes are adherent to the inner table of the bone in the neighbourhood of both these patches. Microscopically each patch consists of a small celled growth, inflammatory in character. There is much young connective tissue, some of which has undergone caseation.

From a boy, aged 18, who was admitted with multiple periosteal abscesses and synovitis of both knees. He had previously been operated upon for the removal of dead bone from his tibiæ. There was no history attainable of congenital or of acquired syphilis. The patient had suffered from disease of the bones for about eight years before his death. At the autopsy, all the joints which were examined were found to be diseased, each containing an excessive quantity of inspissated synovial fluid. The liver weighed 10 lbs. 9 oz. Its surface was scarred, puckered, and contracted. Under the microscope it was found to have undergone almost typically the changes which result from amyloid degeneration; but without any increase of fibrous tissue. The spleen was enormously enlarged, weighing more than three pounds. Microscopically it was blurred and indistinct, with a slight infiltration of amyloid material. The kidneys were large and pale; they presented the appearance of catarrhal nephritis with commencing amyloid degeneration in the glomeruli. In the posterior wall of the pharynx, immediately above the upper opening of the œsophagus, was a considerable amount of cicatricial tissue.

See *Male Surgical Register*, vol. v. (1886), No. 2691*.

312b. The Right Humerus from the same case as the preceding. The articular cartilage of the head is thinned in almost its whole extent, and is of a bluish colour. On the posterior aspect of the head, near the anatomical neck, is a deeply-cut groove, extending for an inch or more towards the centre, after which it turns towards the great tuberosity, and ramifies over the greater part of the posterior surface of the head. The posterior portion of the articular surface looks as if portions of cartilage had been gouged away, so as to leave irregular tracts with crescentic margins. Islands of cartilage here and there remain intact. At those parts where the cartilage is most deeply destroyed the ulceration has involved the bone, and it has undergone the same gouging process as the cartilage. Crossing the bone, and closely attached to it, is a thin membranous layer. When this is peeled off the bone is found to be rough and softer than usual. Microscopically this membrane is cellular, and is continuous with the synovial membrane. It fades gradually as it approaches the centre of the cartilage. The cartilage capsules are larger than usual, the cells are multiplying, and the matrix is fibrillating. The synovial membrane is more vascular, and is thicker than usual, but otherwise it appears to be normal. The shaft is thickened and misshapen by the deposit of porous new bone. The new bone is in parts tolerably firm, but in other parts is soft and crumbling. Beneath the periosteum in some parts are seen deposits of inspissated pus. The lower two-thirds of the shaft are more affected than the upper third.

A section is preserved in Series lv. No. 7a.

312c. The Head of the Left Humerus from the same case as the preceding specimens. The articular cartilage is thinned over a large extent of its surface, the thinning being less marked at the centre than towards the circumference. The thinner portions are of a bluish colour. At the lateral and posterior margins of the head, near the anatomical neck, are deeply excavated tracts. The lateral excavation commences at the margin of the head and extends forwards towards the centre of the articular surface. The base of the excavation is covered by a fibrillated membrane, which is continuous with the thickened synovial membrane of the joint. A process of the synovial membrane extends forwards and accurately fits into the excavated surface, though it is not adherent to it. The excavation on the posterior surface of the head is more irregular, and has exposed roughened bone. From the lower portion of this surface the excavation extends downwards for a short distance along the shaft into the substance of the bone itself. The synovial membrane is thickened and fringed as in cases of osteo-arthritis.

312d. The Right Knee-Joint from the same case has undergone very much the same changes as those described in the preceding specimens. The synovial membrane is everywhere thickened and hyper-vascular. The patella is surrounded by a mass of fringes, some very pedunculated, others almost sessile; some large, and resembling masses of fat, others delicate and filamentous. The external condyle presents a deep groove which runs antero-posteriorly for about an inch and a quarter. The groove extends down to and involves, but does not expose, the bone, which is covered by a membrane similar to that which lines the "ulcerated" or grooved portions in the shoulder-joint. Towards the upper and anterior part the groove becomes shallower, and an island of cartilage remains intact. The cartilage on the upper part of the condyle is rough and fibrillated. On the upper part of the internal condyle is a large nodular outgrowth of cartilage about an inch in length. On the most convex part of the same condyle is a small mass of fibrillated cartilage. With these exceptions the rest of the cartilage on this condyle is normal. The cartilage covering the patella is rough and fibrillated, whilst that crossing the upper extremity of the tibia is very slightly roughened. The ligaments of the joint are normal.

Drawings are preserved in Series lvii. No. 12a.

437b. A portion of the Calvaria of a child infiltrated with masses of a tough, reddish, sarcomatous growth. The masses are numerous, and give the exterior of the cranium a knobbed and pigmented appearance, whilst they project as large tumours into the cavity of the skull.

From a boy, aged 1½, who died in one of Dr. Gee's wards. The whole anterior part, and the greater portion of the base of the skull, was infiltrated with large masses of a tough, reddish, new growth, which was found, on microscopical examination, to be a round-celled sarcoma. Many other bones were infiltrated. The ten upper ribs on the left side, the nine lower ribs on the right, the whole pelvis, and both femora were infiltrated, and presented numerous sarcomatous bosses. All the lumbar and cervical

glands, the right lobe of the liver, and the right suprarenal bodies contained masses of new growth. The case began with pain in the right hip in October. In December a swelling was noticed over the eye. This was rapidly succeeded by swellings on other parts of the skull. Both eyes were extremely depressed, and the corneæ sloughed. The growth increased very fast, and the child died on March 3rd.

Cf. also Series xxviii. No. 2392b.

See *Transactions of the Pathological Society*, vol. xxxvi. (1885), pp. 393-395.

437c. Portion of the Middle Fossa of a Skull infiltrated with a round-celled sarcoma, from the same patient as the preceding. A considerable mass of new growth is seen projecting upwards into the cranial cavity.

437d. Two Ribs from the same case as the preceding, infiltrated with a round-celled sarcoma. On both bones there are prominent bosses of new growth, which projected into the thoracic cavity.

454a. A Section of the Right Foot, showing a sarcomatous growth springing from beneath the periosteum of the bones of the tarsus. The growth is large, and, as usual, not circumscribed; it extends through the deeper tissues of the foot, and has involved the skin of the sole, where it presents as a fungating mass. Microscopically it is a spindle and oval-celled sarcoma, with a hyaline matrix and many hæmorrhages.

F. æt. 42. The swelling was first noticed seven months before the amputation was performed.

See *Female Surgical Register*, vol. iv. (1866), No. 61.

475a. A portion of the Shaft of a Femur excavated by the growth of an endosteal sarcoma. The femur is hollowed out into a conical cavity, filled by the firm tapering mass of new growth. At its upper part the bone has been sawn across at a point immediately below the great trochanter, whilst the lower portion has sustained an irregular transverse fracture. The medullary canal is closed by a deposit of sclerosed bone, except at its centre, where the new growth has caused absorption. At one spot the shaft of the femur is thickened so as to form an oval swelling. Microscopically the new growth is a fibro-sarcoma, which is in places undergoing calcification. No myeloid cells were found.

The patient, a gentleman aged 28, had suffered pain in his right thigh for four months. On examination a tumour was discovered in the long axis of the femur. Shortly afterwards, whilst turning in bed, the femur broke. Amputation was performed, and the patient made a good recovery.

Sections of the growth are preserved in Series lv. No. 21a.

Drawings of the tumour as it appeared before and after removal are preserved in Series lvii. No. 28a.

See also *Transactions of the Pathological Society*, vol. xxxvii. p. 377, and plate xiv. figs. 2, 3, 4.

Presented by J. Langton, Esq.

477a. A Longitudinal Section of the lower two-thirds of the Femur, showing the changes which have resulted from the growth of a spindle-celled sarcoma around its lower part. Immediately above the condyles is a considerable quantity of new bone, which has been deposited in the form of spiculæ, whilst in other parts the bone is eroded by the pressure

of the tumour. The growth, which extended round the whole circumference of the femur, was of an elongated oval form, and was in parts pulsating. (In Case G.)

M. æt. 40. The patient had noticed a swelling on the inner side of his left knee-joint for seven years. It was painless during the first two years, but subsequently became painful, the pain increasing in severity until the limb was removed. The other half of the femur with the tumour is preserved in Series i. No. 477b.
See *Male Surgical Register*, vol. iv. (1886), No. 1368.

482a. The Left Half of the Inferior Maxilla, greatly expanded by the growth of a calcifying fibro-sarcoma, which originating from the endosteum, expanded the bone in all its diameters to a considerable extent. The surface of the section is fibrous, with a number of small granular points where the lime salts have been deposited.

From a lady aged 35, in whom the tumour had been growing for six years. Microscopic examination showed that it chiefly consisted of fibrous tissue, in the meshes of which were sarcomatous cells. The growth was in parts undergoing calcification.

Presented by W. S. Savory, Esq., F.R.S.

SERIES II.

DISEASES OF JOINTS.

567a. Syphilitic disease of the Knee-Joint. A gummatous deposit has taken place all round the lower portion of the femur beneath the muscles. These deposits have involved the upper and outer part of the synovial membrane, and have projected into the joint in the form of ragged ulcerated lumps and fringes. The lower portion of the femur is denuded of its periosteum. A glass rod has been passed behind the gummatous growth into the joint. The joint when it was first opened contained several masses of dark grumous material.

From a man aged 24, who contracted syphilis three years before his death. Gummata were found in the brain and on the face.
See *Male Surgical Register*, vol. i. (1884), No. 2001, and *Surgical Post-Mortem Book* for 1884, p. 76.

569a. A portion of the Forearm and Hand, prepared to show the great destruction of synovial membrane which has taken place as a result of necrosis of the carpus. The synovial membrane of the carpal articulation has everywhere undergone pulpy degeneration. The bones of both the proximal and distal rows of the carpus are as bare and denuded of cartilage as if they had undergone maceration.

From a man aged 58, who had injured his index-finger two months previously.
See *Male Surgical Register*, vol. ii. (1885), No. 376.

576a. A portion of the Left Tibia from a case of acute inflammation occurring after the removal of a myeloid sarcoma. The synovial membrane is thickened and pulpy, being covered with shreds of flaky

coagulated lymph. In the head of the tibia is a large cavity communicating with the exterior by an extensive aperture. The roof of this cavity is formed by the internal semilunar cartilage covered by a thin shell of necrosed bone. In the cartilage is an opening as large as a sixpence, which brings the cavity into direct connection with the knee-joint.

From a man aged 25, who was kicked on the knee by a horse five years previously; three years after the injury a tumour as large as an orange was noticed in the head of the tibia; four years after the injury the tibia was fractured just below the tumour. The tumour on examination was found to be a myeloid sarcoma expanding the head of the tibia over it. The thigh was amputated three weeks after the removal of the sarcoma. The cartilage of the internal femoral condyle was then found to be ulcerating, the bone being eroded. A hole as large as a shilling existed in the upper reflexion of the synovial membrane, forming the communication between the knee-joint and an abscess on the outer side and lower part of the thigh.

See *Male Surgical Register*, vol. iv. (1884), No. 1788.

624a. A number of small Pieces of Necrosed Bone discharged per urethram by a patient who had disease of his hip-joint. The greater number of the fragments are rough and nodulated on one side, smooth on the other. In some cases the smooth surface is spherical, as if it might have formed a portion of the head of the femur.

From a young gentleman aged 10, who, after an injury at football, was confined to his bed for ten months with symptoms of acute disease of the right hip-joint. During this period a number of pieces of bone ulcerated through the skin over the joint, and the pieces here preserved were discharged by the urethra. Eight years subsequently he became a patient in Pitcairn Ward.

See *Male Surgical Register*, vol. iii. (1886), No. 387.

Presented by Dr. H. N. Evans.

656a. A portion of the Femur and Tibia with the Patella. The bones are fused together by the process of bony anchylosis. The tibia is dislocated outwards and backwards as the result of long-standing joint-disease. The specimen, therefore, illustrates the form of "triple displacement" which so often succeeds chronic inflammation of the knee-joint, for the articulation is flexed, dislocated backwards, and rotated outwards. (In Case G.)

669c. The Shoulder-Joint from a case of suppurating osteo-arthritis. The articular extremities of the bones are devoid of cartilage and present the appearances characteristic of osteo-arthritis in an advanced stage. (In Case G.)

From a man aged 25, who had an abscess round the shoulder-joint which had been repeatedly opened. His wrist was excised three and a half years before death for strumous disease.

See *Male Surgical Register*, vol. i. (1885), No. 3634.

691c. The Right Knee-Joint affected with osteo-arthritis, from a patient who had locomotor ataxy.

The synovial membrane is everywhere thickened and pulpy, and is in some parts papillated. The cartilage of the condyles is ulcerated, the ulceration being most marked upon the inner side. On the bones are small pearly concretions like sago

grains. The articular surface of the patella is completely covered by thickened synovial membrane.

The whole of the posterior surface of the upper end of the tibia for a depth of three inches is worn away in such a manner as to allow of the dislocation of the bone forwards upon the femur, and a new articulating surface has been formed upon the eroded portion, partly by a moulding of this surface, and partly by the growth of osteophytic processes. A portion of the lower surface of this new articulating cavity is formed by the posterior part of the original articular surface of the head of the tibia, which having been apparently undermined, appears to have slipped down bodily, letting the femur fall, so to speak, and carrying with it a part of the external semilunar cartilage. This part of the original joint surface has, therefore, taken up a vertical, instead of a horizontal position.

The posterior crucial ligament, with a portion of the external semilunar cartilage, remains attached to the femur.

The anterior crucial ligament retains its normal connection with the tibia, but it has lost its attachment to the femur, and is connected above with the thickened tissue surrounding the patella.

The margins of the articulating surfaces of the femur and tibia are "lipped" by slightly projecting outgrowths.

A drawing of this joint is preserved in Series lvii. No. 45l.

691d. The Left Knee-Joint from the same patient as the preceding.

The synovial membrane is vascular and papillated, the portion below the patella being pulpy. The cartilage covering the internal condyle is ulcerated at one spot. It is thickened, and is clearly undergoing fibrous degeneration over its whole extent, although it still retains its polished surface.

The cartilage covering the external condyle is thickened, except at one part, where it is worn away, leaving dense eburnated bone.

The edges of the articulating surfaces of the condyles are "lipped."

The semilunar cartilages are intact.

The anterior crucial ligament is pulpy and in part eroded; the posterior is also softened. The patella is "lipped;" it is covered by cartilage undergoing pulpy degeneration. It is not overgrown by thickened synovial membrane. The articular surfaces of the head of the tibia are bare of cartilage. The external surface is undergoing erosion at the point at which it is opposed by the eroded surface of the external condyle of the femur. All the soft tissues are more or less thickened, pulpy, and degenerated.

A drawing of this joint is preserved in Series lvii. No. 45m. For further details and a history of the case, see Case iii. in a paper by Mr. Morrant Baker "Upon Cases of Joint-Disease in Connection with Locomotor Ataxy" in the *Transactions of the Clinical Society*, vol. xvii. (1885), where a reproduction of the drawings will be found.

693a. The Left Knee, showing in an almost typical manner the results of osteo-arthritis. There is a great overgrowth of cartilage around the articular surface of the femur, especially at the upper and anterior margin of the external condyle. This cartilage is ossified in such a way as to form nodular osteophytes. The patella and tibia show similar osteophytes or ecchondroses. The cartilage covering each of the articular surfaces of the joint is fibrillated and worn down, but the subjacent bone is nowhere exposed. The synovial membrane is thickly covered with fringes, giving it a shaggy appearance.

The patient, a man aged 25, died of Bright's disease and œdema of the glottis; it was doubtful whether he had congenital syphilis.

A drawing is preserved in Series lvii. No. 45u.

See *Male Surgical Register*, vol. i. (1886), No. 713.

SERIES III.

INJURIES OF BONES (FRACTURES).

747a. The Patella and Lower End of the Femur. The patella has sustained a comminuted fracture, whilst the femur has been fractured transversely and longitudinally in such a manner as to give rise to a T fracture extending into the knee-joint.

From a woman aged 64, who was admitted with such numerous and severe injuries as the result of a fall from a third-floor window that she died on the following day.
See *Female Surgical Register*, vol. i. (1886), No. 813.

897a. A Fracture of the Inferior Maxilla. The jaw is broken between the canine and the first bicuspid teeth on either side. This is the common seat of fracture. It was wired during life.

From a boy aged 14, who was caught between the rollers of a printing-machine, sustaining such injuries that he died within a week.
See *Male Surgical Register*, vol. v. (1885), No. 664.

904a. A Clavicle, showing an ununited fracture of the acromial end, of ten years standing. The extremities of the fragments have become rounded off so as to form an imperfect joint, which in the recent state was enclosed in a capsule. From a woman aged 52.

See *Female Surgical Register*, vol. i. (1886), No. 2772*.

918a. A portion of the upper extremity of the Right Ulna. The olecranon had been fractured probably many years previously. When fresh, the olecranon was united to the shaft of the ulna by tolerably firm fibrous bands. (In Case H.)

From a subject brought to the Hospital for dissection.

956a. A Comminuted Fracture of the Neck and great Trochanter of the left Femur. There has been very considerable displacement of the fragments, but good bony union has resulted. (In Case H.)

From a woman aged 75, a lunatic, who fell while crossing the room; she died two months later from causes unconnected with this injury.

Presented by G. Mickley, Esq., M.B.

SERIES IV.

INJURIES OF JOINTS (DISLOCATIONS).

1055a. A Dislocation of the proximal Interphalangeal Joint of the ring-finger. There was shortening of the finger, and the flexor aspect of the proximal phalangeal joint was convex towards its palmar surface. The longitudinal section shows that there is a dislocation of the middle

phalanx on to the dorsum of the proximal. Accompanying this deformity are changes in the joint and an abundant deposit of urate of soda in the dorsal aponeurosis and fascia covering the proximal phalanx. The interphalangeal joint contained a little turbid fluid, and its cartilages have almost disappeared; but where they are present they contain a quantity of urate of soda. The articular ends of the bones are slightly eburnated, and small osteophytes surround their articular margins. The anterior ligament is entirely destroyed, and the capsular and lateral are elongated. The dorsal aponeurosis is much thicker than natural, and impregnated with urate of soda crystals, and it permits the reduction of the dislocation.

This specimen was obtained from a male aged about 48. All his articulations showed similar changes in the cartilages, bones, and ligaments. See *Transactions of the Pathological Society*, vol. xxxvii. p. 560.

Presented by C. B. Lockwood, Esq.

SERIES VI.

DISEASES OF FASCIÆ AND BURSÆ.

1203a. Contraction of the Palmar Fascia, or Dupuytren's contraction. The central palmar fascia is greatly thickened opposite the cleft between the ring and little finger. The skin and thickened fascia are closely united, especially opposite the line which marks the front aspect of the metacarpo-phalangeal joint. A red rod has been placed beneath the cicatrised band, which goes to the radial side of the little finger. This band is most intimately connected with the digital nerve and artery. A blue rod has been placed beneath the digital vessels and nerves of the ulnar side of the ring-finger, and shows that they are separated by a considerable interval from the very prominent cicatrised band.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 556.

1203b. Contraction of Fascia of the Little Finger of the Left Hand; a red rod has been placed beneath a band of thickened fascia, which caused a contraction of the finger.

The specimen was obtained from a female æt. 19. The deformity of the finger had appeared without any ostensible cause, and had gradually progressed. There was no evidence to show that it was congenital. Casts of both hands are preserved in Series lvi. No. 68b.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 556.

This and the preceding specimen were presented by C. B. Lockwood, Esq.

1205d. Synovial Fluid from an intermuscular cyst in the calf.

From a woman of 40, who had chronic synovitis of the right knee-joint for seven years. Three weeks before the fluid was removed she had swelling of the leg, and then noticed the cyst. It lay to the inner side of the calf, and seemed to be beneath the inner belly of the gastrocnemius. It was ill-defined, oval, measuring about thre:

inches in its vertical diameter by two in its transverse. Its upper edge was about three inches below the joint of the knee. Puncture with a grooved needle let out four or five ounces of synovial fluid mixed with flakes of fibrin or lymph.

The synovial membrane of the knee was much thickened; the joint had fluid in it, and moved with some friction. By gentle continued pressure the cyst could be emptied of its contents more or less completely into the joint, but the fluid passed back again when the pressure was removed.

Measurements—R. knee, 15 in.; L. knee, 14½ in.; R. calf at level of cyst, 15¼ in.; L. calf at same level, 14 in.

Presented by Stephen Paget, Esq.

SERIES VII.

DISEASES AND INJURIES OF THE HEART.

1248a. A Heart which has ruptured. The left ventricle is greatly dilated, and its muscular tissue is easily torn. At the upper part of the right ventricle, near the lower portion of the conus arteriosus, is a rent extending completely through the substance of the heart. In the recent state the laceration, through which a glass rod has been passed, was occupied by a clot of blood. To the left of the rent is a rupture through the fat and muscular tissue, about 1¼ inch in length. It is situated just over the anterior part of the ventricular septum, but it does not penetrate any cavity. This laceration extended upwards under the visceral layer of the pericardium, and appears to open into a branch of the anterior coronary artery. A red rod has been passed along it for some distance.

M. æt. 54; was admitted in a comatose condition; no further history was obtainable.

At the autopsy the pericardium was found to be filled with blood. The internal coat of the aorta was swollen and atheromatous, and there was a large hæmorrhage into the right side of the brain.

See *Matthew Ward Book* for 1885, p. 865.

1263a. An Adult Heart with Multiple Aneurysms. The heart weighs sixteen ounces. The pericardium is adherent to the base; the foramen ovale is patent; the mitral valve is diseased; two small aneurysms spring from the left ventricle, and one opens into the left auricle.

From a woman aged 44, who died with anasarca and ascites. She had rheumatic fever sixteen years previously.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 147.

1302a. A Heart showing the effects of ulcerative endocarditis. The heart is hypertrophied, weighing twelve ounces. There are large soft fibrous growths on all the aortic valves, and on the posterior valve is a shallow ulcerated spot as large as a silver penny. Upon the aortic surface of the mitral valve there is a small growth, and in the substance of the valve is a nodular swelling.

See *Medical Post-Mortem Book*, vol. xi. p. 246.

1303a. Portions of the Left Auricle and Ventricle of an Adult Heart. The mitral valve is thickened, and its cusps are fused into a single circular membrane, which projects into the auriculo-ventricular opening in the form of a tense ring.

1348a. A portion of Left Ventricle of the Heart, with the commencement of the Aorta. The aortic orifice is greatly narrowed, whilst the aortic valves, as a result of inflammation, are dilated and perfectly rigid from calcification. There are only two cusps to the valves, but this appears to be due to the inflammatory process having caused ulceration of the adjacent margins of the valves, which subsequently became fused. The arterial surfaces of the valves present knobs of earthy material surmounted by small masses of fibrin.

From a man aged 82, who died from pneumonia, and who had a serous effusion into the brain.

Presented by H. Parker, Esq.

1445a. Portions of an Artery infiltrated by sarcoma. The upper specimen is a part of the axillary artery free from the infiltration; its lower extremity is discoloured and jagged from the action of the pressure-forceps applied to arrest hæmorrhage. The two lower specimens are portions of the acromio-thoracic axis surrounded by and infiltrated with sarcomatous growth. The vessels, with the exception of the one into which the bristle is passed, are plugged with a firm clot.

From a man aged 33, who was admitted with a large tumour beneath the pectoral muscles. The mass was soft, and manifestly increased in size during the fortnight the patient was under observation. An attempt was made to remove the growth by a free incision along the lower margin of the pectoralis major, where it presented, through the fat of the axilla, a well-defined outline. That part of the tumour which lay below the vessels was easily removed, but no attempt was made to detach the portion which was found, during the operation, to have grown around those structures. Whilst securing some insignificant arteries, which had been divided in the lower part of the axilla, the hæmorrhage, which up to that stage had been but slight, began to be exceedingly copious. In searching for the seat of the bleeding, it became evident that it proceeded from where the axillary artery should have been, though that vessel could nowhere be found. The hæmorrhage was afterwards arrested by means of pressure-forceps. The patient lived a week after the operation, when there was suddenly a violent gush of blood, and before it could be arrested he died. Post-mortem examination showed that the part of the axillary artery involved in the tumour was completely broken up.

Sections are preserved in Series lv. No. 64b.

See *Medico-Chirurgical Transactions* for 1885, vol. lxix. p. 157.

SERIES VIII.

DISEASES AND INJURIES OF ARTERIES.

1466a. The Arch and a portion of the descending Aorta, showing a dissecting aneurysm of this vessel. At the junction of the descending portion of the arch with the thoracic aorta is a calcareous plate,

measuring one-third of an inch in length, and situated in the posterior wall of the vessel. This is cracked across, a transverse linear fissure allowing of the escape of blood between the middle and outer coats of the artery. The escaped blood extended about one-third round the aorta, tracked down the whole length of the vessel, and made its way between the coats of the two iliac arteries. Some portions of a laminated clot are still visible attached to the separated aortic walls.

A woman aged 55 was suddenly seized with severe pain in the epigastrium; she vomited several times. The pain and vomiting continued with remissions until she died unexpectedly at the end of a week from the onset of the first symptoms.

See *St. Bartholomew's Hospital Reports*, vol. xxi. (1885), pp. 211–216.

Sections are preserved in Series lv. Nos. 63a and b.

SERIES X.

DISEASES AND INJURIES OF THE LARYNX AND TRACHEA.

1631a. The Larynx from a patient who died of tubercular phthisis. The larynx presents the appearances seen in early cases of laryngeal phthisis, viz., some tumefaction and slight thickening of the mucous membrane.

1631b. The Larynx of a child, showing very early tubercular ulceration of the interarytænoid fold.

1631c. The Larynx from a case of tubercular phthisis; the whole mucous membrane is in a condition of diffuse superficial ulceration.

1631d. The Larynx from a patient who died of tubercular phthisis. The whole mucous membrane is the seat of a process of diffuse ulceration.

1631e. The Larynx and a portion of the Trachea from a patient who died with tubercular phthisis. The epiglottis is thickened by a tubercular inflammation, and has undergone some amount of ulceration at its apex. The right vocal cord is ulcerated, and there is a deep circumscribed ulcer in the subglottic portion of the larynx.

The four preceding specimens were presented by Percy Kidd, Esq., M.D.

1633c. The Glottis and a portion of the Trachea of a patient who died from tubercular phthisis. There are numerous scattered ulcers on the interarytenoid fold and in the portion of the trachea which lies immediately beneath the glottis.

1633d. The Larynx from a case of tubercular phthisis. There is a deep circumscribed symmetrical ulcer of the processûs vocales; the ulcer on the left side is the deeper.

The phthisis was of about fifteen months duration; there were no laryngeal symptoms during life; the ulcers were probably of recent origin.

1633e. The Glottis of a patient who died with tubercular phthisis. The whole cavity of the larynx is ulcerated, the ulceration being deeper upon the left side. The vocal cords are destroyed.

The three preceding specimens were presented by Percy Kidd, Esq., M.D.

1636a. A Larynx with a portion of the Tongue and of the Trachea, from a patient aged 20, who died of tubercular phthisis. The whole of the supraglottic portion of the larynx has undergone ulceration, especially upon the left side. The left great cornu of the hyoid is necrosed, and the epiglottis is completely destroyed.

See *Matthew Ward Book* for 1885, No. 1304.

SERIES XI.

DISEASES AND INJURIES OF THE PLEURA, BRONCHIAL TUBES, AND LUNGS.

1685a. Casts of the Bronchial Tubes from a case of plastic bronchitis. The casts occur in the form of solid cylinders, measuring more than an inch in length, and of the thickness of a crow-quill; they consist of a fibrinous material. Some of the cylinders have a bifid extremity, which represents the dichotomy of the smaller bronchi.

From a gentleman aged 30, who had suffered for three months previously from an attack of tracheitis with some bronchitis. The bronchitis ran a somewhat chronic course, and about the end of the third month the casts were coughed up. Before this happened the patient perspired a great deal, but had no marked rise of temperature.

Presented by S. J. Gee, Esq., M.D.

1704a. A portion of the Left Lung from a case of pneumothorax. The lung is collapsed against its root, and was bound down by the thickened pleura. It presents several superficial depressions, which, from the rounded appearances presented by their edges, are apparently of long standing. Rods have been passed through these depressions into the finer bronchi.

From a man aged 24, who had an attack of pleurisy five years previously: shortly after admission to the Hospital five pints of pus were removed from his chest. Three months later he developed signs of phthisis, and soon afterwards died. See *Matthew Ward Book* for 1884, p. 1555.

1728a. A portion of the Right Lung infiltrated with sarcoma, from a case of primary sarcoma of the lung. The surface of the lung is covered with soft lymph. It was collapsed against the root. From the root a new growth penetrates the lung. The growth begins around and between the bronchi, and extends for two inches into the walls of both bronchi, but without penetrating into their interior. In the lower part

of the lung is a cavity filled with coagulated flocculent lymph. The microscopical characters of the growth are those of a round-celled sarcoma.

A man aged 52, a year before admission to the Hospital, began to complain of weakness and cough, with pain in the chest and occasional hæmoptysis. Five weeks before admission he became hemiplegic. A week before his death he had a large pleural effusion on his right side. At the autopsy several secondary growths of sarcoma were found in various parts of the brain.

See *Post-Mortem Book*, vol. xi. p. 261, and *Transactions of the Pathological Society*, vol. xxxvi. pp. 120–122.

1729a. A portion of Lung affected with new growth. The lung is infiltrated round its root by a new growth of carcinomatous type. The growth followed the line of the bronchi, and was continuous with a mass of new growth surrounding the main bronchi.

From a case of cancer of the mediastinum occurring in a man aged 26.
See *Medical Post-Mortem Book*, vol. x. p. 53.

1759b. A Section of the Left Lung, showing the results of a severe contusion without fracture of the ribs. The lower lobe is filled with blood, which has been extravasated into the substance of the organ.

From a patient who was brought dead into the Hospital.
See *Post-Mortem Register* for 1885, p. 184.

SERIES XII.

DISEASES AND INJURIES OF THE NOSE, MOUTH, TONGUE, PALATE, AND FAUCES.

1770b. A Large lobed Naso-Pharyngeal Polypus, measuring 2 inches in breadth and nearly 3 inches in length. It was removed by avulsion from a man aged 65, in whom it had been growing for the preceding fourteen years.

1788e. The Left Anterior Half of a Tongue, which was removed on account of the large epitheliomatous ulceration seen upon its lateral aspect. The ulcer extends for some distance along its under surface, and the raising up of the tissue around its edges has given to it an almost fungating appearance.

M. æt. 64. A tumour of the tongue had been noticed for five months prior to the operation. The lymphatic glands were not enlarged. The patient made a rapid recovery after the removal of the tongue.
See *Male Surgical Register*, vol. ii. (1885), No. 3345.

SERIES XIII.

DISEASES OF THE TEETH.

1811j. A Wisdom Tooth of abnormally small size, extracted for caries.

Presented by W. M. Gabriel, Esq.

SERIES XV.

DISEASES AND INJURIES OF THE PHARYNX AND ŒSOPHAGUS.

1839a. A Tongue and Larynx with a portion of the soft Palate, showing the narrowing of the pharynx which has resulted from the cicatrisation of long-standing syphilitic ulcers. The calibre of the œsophagus is greatly narrowed at a point corresponding with the cricoid cartilage, whilst the vocal cords are ulcerated. The soft palate had ulcerated completely through, but the ulcer had healed, leaving a perforation though which a rod has been passed.

From a woman aged 36, who had borne ten dead children.

Presented by H. Holdrich Fisher, Esq.

SERIES XVII.

DISEASES AND INJURIES OF THE STOMACH.

1908c. The Stomach of an infant. Numerous small but deep round or oval ulcers are seen on the posterior wall of the cardiac end near its lesser curvature. The position of some of the ulcers are marked by small blood-clots.

A small male child, born after a natural but rather tedious labour, suddenly vomited blood 21½ hours after birth, and a few hours later melæna succeeded. Up to this time milk was taken and vitality seemed but slightly impaired. The discharge of blood continuing, much altered by admixture with meconium and mucus, the child rapidly sank, and died within twenty-four hours from the first appearance of blood.

See *Transactions of the Clinical Society* (1886), vol. xix. p. 1.

Presented by Dr. Sawtell.

1908d. A portion of the Wall of the Stomach, showing a thickening of its coats and at one spot a chronic ulcer. The ulcer is circular in form, measuring rather more than an inch in diameter, with distinct abrupt edges; it is situated on the lesser curvature two inches from the pylorus. In its base are two perforations both closed with lymph. There are no old adhesions, nor is there any thickening at the base.

See *Medical Post-Mortem Book*, vol. x. p. 224.

1919b. A portion of a healthy Stomach with the Cardiac Orifice. A tumour is seen to surround the orifice in such a manner that about one-third of its circumference is formed by a tough whitish growth of a somewhat reniform shape. The tumour is covered by healthy mucous membrane; it is slightly constricted at its base, and appears to spring from the submucous tissue. The cardiac orifice is not obstructed. Microscopical examination showed that the tumour is a fibro-myoma, consisting of bundles of delicately fibrillated tissue interlacing in places, with long rod-shaped nuclei interposed in the axis of the fibres.

See *Transactions of the Pathological Society*, vol. xxxv. p. 196.

Presented by Percy Kidd, Esq., M.D.

SERIES XVIII.

DISEASES AND INJURIES OF THE INTESTINES.

2031a. An Appendix Vermiformis. The first inch is normal, but immediately below this a small though not very hard fæcal mass was impacted in such a manner as to cause ulceration and perforation of the bowel. The apex of the vermiform appendix was entire, but between the impacted mass and the apex the wall was ruptured in more than one place.

The fæcal mass is in a small bottle at the bottom of the jar containing the specimen.

See *Medical Post-Mortem Book*, vol. x. p. 344.

2040a. A portion of the Duodenum, exhibiting two large rents with jagged edges, in addition to two small circular apertures. All the injuries were inflicted during the life of the patient, who died collapsed five hours after a blow upon the abdomen.

SERIES XIX.

DISEASES OF THE RECTUM AND ANUS.

2062a. A portion of the Rectum, laid open to show a pedunculated rectal polypus. The polypus is attached to the mucous membrane of the intestine by a tapering stalk measuring an inch and a quarter in length. It is spongy in texture, and it contains small cavities filled with clear fluid. Under the microscope the tumour is found to be composed of areolar tissue containing a number of glands resembling those found in the rectal mucous membrane.

From a woman aged 50, in whom it was accidentally discovered at the post-mortem examination.

SERIES XX.

HERNIÆ OR PROTRUSIONS, AND OTHER DISPLACEMENTS OF THE INTESTINAL CANAL AND OMENTUM.

2136a. Congenital Hernia from a sucking-pig. The tunica vaginalis contains a loop of small intestine. The plica gubernatrix and plica vascularis are well shown.

Presented by C. B. Lockwood, Esq.

2143a. A Cyst which constituted the sac of a hydrocele of a femoral hernia. At its upper part the cyst was in connection with the crural canal by a narrow aperture, which during life admitted of the passage of a probe.

F. æt. 44, who had noticed a swelling in her right groin for twelve months. The tumour was tapped six months after its appearance, when clear fluid was evacuated. The swelling gradually returned, and the entire sac was removed six months after it had been tapped.

See *Female Surgical Register*, vol. i. (1885), No. 1973.

MULTIPLE INTUSSUSCEPTION.

2181a. The Ascending, Transverse, and a portion of the Descending Colon of a child. At the ileo-cæcal valve the small intestine has become invaginated into the colon for a distance of about two inches, carrying with it a portion of the caput coli and a part of the vermiform appendix. The invagination is two inches in length. A trap-door has been cut in the colon to show the flakes of lymph upon the intussuscepted portion of intestine. In the transverse portion of the colon is a second intussusception, the distal portion of the large intestine being ensheathed in the proximal part. It is therefore an example of the extremely rare form of intussusception known as the "ascending" variety. As in the previous case, a trap-door has been cut in the wall of the intestine to show the presence of recently effused lymph. From the presence of the lymph it may be argued that both intussusceptions occurred during life.

From a male child aged 5 months, who presented the ordinary symptoms of acute intestinal obstruction. Injections of milk and water and of air were tried ineffectually. The infant died five days after the onset of the symptoms. A drawing is preserved in Series lvii. No. 26ci.

A full account of the specimen will be found in the *Pathological Society's Transactions*, vol. xxxvii. p. 240.

Presented by John Emmerson, Esq., M.D.

SERIES XXI.

DISEASES AND INJURIES OF THE LIVER.

2231a. An unusually complete Hydatid Cyst removed by dissection from the liver of a woman. The contents of the cyst had suppurated.

F. æt. 30. Pain had been felt in the right side of the abdomen for a month previously. An abscess had burst through the navel ten days before the removal of the cyst.

See *Martha Ward Book* for 1885, No. 195.

SERIES XXVI.

DISEASES OF THE THYMUS AND THYROID GLANDS.

2319c. The Tongue, Larynx, Trachea, and Thyroid Gland from a case of primary sarcoma of the thyroid. The new growth forms a huge mass which ulcerated through the skin and has extended into the thorax. It completely compresses the left recurrent laryngeal nerve, and has flattened the two common carotid arteries. It has grown by a downward prolongation through the upper wall of the arch of the aorta, but without causing any extravasation of blood.

F. æt. 46. Sarcomatous deposits were found in the kidneys, in one rib, and in the brain. All the deposits consist of sarcoma cells, whilst those in the kidney have a stroma which has undergone hyaline degeneration. The growth had existed for about four months.

Portions of the brain are preserved in Series xxx. No. 2499b ; sections of the brain, thyroid, and kidney in Series lv. Nos. 90r, 95c, and 102a.

See also *Transactions of the Pathological Society*, vol. xxxvii. pp. 513–514.

SERIES XXVIII.

DISEASES AND INJURIES OF THE KIDNEYS, THEIR PELVES, AND THE URETERS.

2338b. The Bladder and Left Kidney from a patient who fractured his spine at the junction of the fourth and fifth dorsal vertebræ five months before death. The bladder is considerably hypertrophied and its mucous membrane is ulcerated. The ureters are dilated. The kidney is inflamed, and contains numerous small abscesses scattered throughout the cortex and pyramids.

M. æt. 54. The patient fell 16 feet from a scaffold across a wall. On admission he was sensible, but had total anæsthesia and akinesia in his lower limbs and in his trunk to the level of the sixth rib. Two months after the accident he had complete atony of the bladder and rectum.

See *Male Surgical Register*, vol. v. (1885), No. 2773*; and for the condition of the cord, *St. Bartholomew's Hospital Reports*, vol. xxi. (1885), pp. 140–143.

CALCULUS IN THE CORTEX OF THE KIDNEY.

2344a. A Kidney having a good-sized rough calculus embedded in its cortex. The substance of the kidney does not appear to be inflamed, and except in the immediate neighbourhood of the stone, where the parenchyma, has been absorbed by pressure, the gland is uninjured.

The calculus does not seem to have given rise to any symptoms during life.

2358a. The Right Kidney in a condition of acute inflammation, resulting from the presence of calculi in its substance and the obstruction of its duct by the impaction of a calculus. The organ is greatly dilated, so that it forms a lobulated cyst; and its parenchyma has undergone absorption until there remains only a thin tough coating of the consistence of leather. In the fresh state the interior of the cyst was of a bright inflammatory colour spotted with flakes of pus, and it still appears shaggy from the deposit of lymph upon its inner surface. The calculus, blocking up the ureter near its commencement, is oval and dark-coloured. Several small dark-coloured calculi of oxalate of lime lay in the infundibula of the kidney.

From a woman aged 31, who suffered long-standing and severe pain of a wearing character in the right side, which she dated from her last confinement, two years previously. She never had any attack of renal colic, hæmaturia, or vesical irritability. A swelling below the liver, noticed for six months, gradually increased until it was as large as a fœtal head. The urine contained pus. An exploratory puncture into the tumour let out thick greenish pus. Nephrectomy was performed, and the patient made a good recovery.

A drawing is preserved in Series lvii. No. 324a.

Presented by Alfred Willett, Esq.

2372d. A Kidney removed by the operation of nephrectomy for disorganisation of its substance, as a result of a large branched renal calculus which occupied the pelvis. The kidney is seen to be little more than a series of thin-walled cysts. The stone consisted chiefly of phosphates.

From a woman aged 41, who had noticed a swelling in the right flank for seven months. The urine was thick and creamy when passed, but there had never been any severe pain, nor was there hæmaturia. After removal the patient made a good recovery. The calculus is preserved in Series lii. No. 52d.

See *Female Surgical Register*, vol. iii. (1885), No. 516, and *St. Bartholomew's Hospital Reports*, vol. xxi. p. 121.

2372e. A Kidney removed by the operation of nephrectomy, on account of the injury which it had sustained from the presence of a calculus. The organ is slightly enlarged, its pelvis is distended, and it is covered with a layer of flocculent lymph. The medullary portion has undergone very considerable absorption, the pyramids being converted into abscess

cavities; this is more especially the case at the upper border of the kidney. The capsule is partially adherent. The ureter, dilated at the upper part, is constricted and thickened below.

From a patient aged 31, who had suffered from symptoms of renal calculus for six years. During the latter part of this period she had profuse pyelitis with high temperature. After removal of the kidney she made a good recovery. Dr. Ord gives the following description of the stone which the kidney contained. "The calculus is somewhat heart-shaped. It weighs 12 grains. Its colour is yellowish brown in parts, and dark grey in others. The surface is tuberculated, and under a low magnifying power has very much the appearances presented by brown sugar, the semi-transparent nodules of which are covered in some parts by a deposit resembling a layer of the same crystals wetted. The calculus consisted of oxalate of lime, of phosphates, and of uric acid, with possibly a small intermixture of carbonate of lime."

Presented by Thomas Smith, Esq.

2390a. A Cancerous Growth in the Right Kidney. The new tissue has infiltrated the whole of the organ, which is enlarged to the size of a fist. The glandular substance has almost entirely disappeared, except for traces of the calices. In the pelvis was a ragged calculus about half an inch in length. The new growth, when examined by the microscope, was found to be a carcinoma with a very large fibrous stroma.

From a woman aged 48. There were cancerous deposits in the liver and lungs.
See *Medical Post-Mortem Book*, vol. xi. p. 341.

2392a. A Kidney from a patient upon whom the operation of nephrolithotomy was performed eight days before death. The organ has become converted into an irregular mass in which are many cavities of various sizes. The largest cavity opened into the operation wound. The cavities contained pus and some small calculi. The whole cortex of the gland is occupied by a mass of new growth, which was found upon examination to be of an epitheliomatous nature. The ureter was entirely compressed by the new growth.

From a woman aged 63, who first noticed a swelling in the left lumbar region five months before admission to the Hospital. Hæmaturia was observed on a single occasion four years previously. During the last year of her life the patient had been troubled with frequent micturition, but the amount of urine passed was exceedingly small. At the operation a large branched calculus was found occupying the pelvis of the kidney. This calculus was removed piecemeal; it consisted of uric acid encrusted with phosphates. At the autopsy the right kidney was found to be of twice the normal size and fatty. The ureter was dilated and pervious; it contained urine.

The calculus is preserved in Series lii. No. 46c.

See *Female Surgical Register*, vol. iii. (1885), No. 793; and *St. Bartholomew's Hospital Reports*, vol. xxi. (1885), pp. 125–127.

2392b. The Right Kidney and Suprarenal Body of a child. The kidney is normal, but the adrenal is enormously enlarged, infiltrated, and surrounded by a tough red sarcomatous growth.

M. æt. 1½. The child was almost a mass of sarcomatous tissue. From the first symptoms of his illness to the time of his death five months elapsed, whilst from the observation of the first swelling which appeared on his skull till the time of his death was a period of thirteen weeks. The growth is a round-celled sarcoma.

See also Series i. Nos. 437b, c, d.

See *Transactions of the Pathological Society*, vol. xxxvi. (1885), pp. 393–395.

2394a. A Right Kidney which has undergone extensive laceration upon its outer and anterior surface.

From a patient who was brought into the Hospital dead.
See *Surgical Post-Mortem Register* for 1885, p. 184.

SERIES XXIX.

DISEASES AND INJURIES OF THE URINARY BLADDER.

2400a. A Bladder and Prostate Gland. The central as well as each lateral lobe of the prostate is enlarged. The bladder is dilated and its muscular coat is somewhat hypertrophied. The mucous membrane is healthy, but it is depressed into numerous small pits between the muscular fibres. At the upper part of the bladder are two well-defined pouches communicating by separate small openings with the general vesical cavity. They appear to be formed by protrusions of the mucous membrane between the muscular fibres.

See *Male Surgical Register*, vol. ii. (1885), No. 2055.

2412c. The Left Kidney and the Bladder, from a case of tubercular disease of the genito-urinary tract. The pelvis of the kidney is dilated and is partially absorbed. The glandular substance appears fatty. In the cortical portion are two or three large cavities which in the recent condition were filled with thin pus. The bladder is much hypertrophied and inflamed, and there is some diffuse inflammation about its neck. The prostate is the seat of a tubercular deposit; it is surrounded by an abscess of about the size of a large walnut, which opened into the membranous portion of the urethra.

From a man aged 43, who had suffered from stricture for twenty-four years; he died of general tuberculosis.
See *Male Surgical Register*, vol. iii. (1885), No. 162.

SERIES XXX.

DISEASES AND INJURIES OF THE BRAIN AND ITS MEMBRANES.

FIBRO-SARCOMA OF THE DURA MATER.

2466a. The Fibro-Sarcoma, weighing, with the attached portion of dura mater, three ounces, was found lying over the left fissure of Rolando. The tumour lay in a bed of thick purulent-looking material in a cavity which it had excavated in the ascending parietal and the ascending

frontal convolutions. The parietal bone was eroded on its inner surface.

From a woman aged 25, who had right hemiplegia thirteen years before her death; for eleven years she suffered from "fits," said to be of an hysterical character; she only once completely lost consciousness.

Immediately after her first labour she suffered from headache; her temperature rose to 105° F. She had a series of "fits;" her pupils dilated, coma set in, and she died five days after delivery.

At the autopsy the uterus was found to be healthy; there was no pus. The lungs were solid. A small mass of new growth was discovered at the left pulmonary apex.

Microscopically the tumour was a fibro-sarcoma. A section is preserved in Series lv. No. 96c.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 12.

Presented by L. Drage, Esq.

PSAMMOMA OF THE DURA MATER.

2466b. A Psammoma involving the superior frontal gyrus of the right side. The tumour is sessile, and is attached to the under surface of the dura mater in the neighbourhood of the falx cerebri. The growth involved the right superior frontal gyrus, which was partially absorbed as a result of pressure.

The specimen came from a body brought for dissection, and no further details could be obtained.

Microscopically the tumour consists of a number of small concentric bodies resembling Paccinian corpuscles in transverse section. These bodies lie in a stroma of fibro-sarcomatous tissue.

Specimens are preserved in Series lv. No. 96b. See also *Transactions of the Pathological Society*, vol. xxxvii. p. 55.

2486a. The Left Cerebral Hemisphere, showing an abscess in the temporo-sphenoidal lobe, which resulted from the extension of an inflammation into the brain substance. The inflammation originated from necrosis of the mastoid cells.

M. æt. 5; admitted with a mastoid abscess, from which offensive pus was evacuated one month before death. At the autopsy no diffuse meningitis was found, but there was a localised patch of inflammation of the meninges corresponding with the diseased bone.

The temporal bone is preserved in Series i. No. 226b. See *Male Surgical Register*, vol. v. (1885), No. 482.

MULTIPLE SARCOMATA OF THE CEREBRUM.

2499a. A Sarcomatous Growth involving the left fifth nerve near its origin. A globular tumour of the size of a small walnut occupies nearly the whole of the interpeduncular space at the base of the brain. It springs from the left fifth nerve, appearing to involve the Gasserian ganglion. In its growth forwards it has pressed upon the left optic tract and the left side of the optic commissure. The left third nerve is flattened by pressure. The fourth and six nerves of the same side are involved in the growth. The inner portion of the left temporo-sphenoidal lobe is partially excavated and infiltrated by the tumour.

A portion of the left occipital lobe has been cut away to show the extension of the sarcomatous tissue into it. (In a flat case in the first gallery.)

M. æt. 49 ; married; an ex-policeman. On February 18, 1885, he had violent pain of a neuralgic character over the left side of his head ; this was accompanied by a slight numbness of the affected part. On the following day there was complete loss of sensation on the left side of the face and over the area supplied by the fifth nerve. There was partial dilatation of the left pupil, which did not react to light. He suffered from earache on the left side, and from severe catarrhal ophthalmia. The patient was unable to feel a continuous current from a thirty-cell battery. On 24th February the cornea of the left eye became hazy, and there was some catarrh of the right eye. On March 17th pain of a severe character was felt in the left arm and fore-arm. The left cornea was sloughing. There was some thickening of the zygoma on the left side.

The patient gradually became worse. There was, however, no optic neuritis in the right eye. Pleurisy developed on the right side. The speech became affected, first only the using of wrong words, but later the patient was entirely unable to speak. The gait became feeble. There was incontinence of urine and fæces, and death occurred on June 27, 1885.

At the post-mortem examination twenty-seven tumours, varying in size from a walnut to an orange, were found in different parts of the body. They occurred, amongst other places, at the root of the right lung, in the liver, kidneys, and mesentery.

Microscopically these tumours were fibro-sarcomatous in character. Sections are preserved in Series lv. No. 102b.

The patient was shown by Mr. Strugnell before the Clinical Society. See *Transactions of the Clinical Society*, vol. xviii. (1855), p. 330, and *Transactions of the Pathological Society*, vol. xxxvii. p. 62.

Presented by F. W. Strugnell, Esq.

2499b. Multiple Sarcomata in the cerebral hemispheres, with entire absence of cerebral symptoms. In the cortical substance of the brain is a cavity filled with recent blood-clot. The cavity is situated in the ascending parietal and supramarginal convolutions. It measures an inch across and an inch in depth. It is lined by a thick membrane, which appears to have given way at its most superficial part, allowing of the protrusion of the new growth. In the substance of the occipital lobe, immediately above and anterior to the end of the posterior horn, was a patch of new growth about the size of a split pea, with a small hæmorrhage just above it. Similar patches of new growth were scattered about in other parts of the hemispheres.

From a woman aged 47, who sustained a lacerated wound from glass in her neck four years before her death. Three or four months before she died her thyroid gland swelled and became painful. The swelling increased rapidly, and the patient, after suffering for a week or two from aphonia, and from stridor for a day or two, died asphyxiated.

The tumour was diagnosed to be a malignant growth of the thyroid. With the exception of some pain in the head, which was referred to the course of the lesser occipital nerve, the patient had absolutely no cerebral symptoms. Microscopically the tumour in the brain consisted of an oval-celled sarcoma.

The thyroid gland is preserved in Series xxvi. No. 2319c. Sections of the brain are preserved in Series lv. No. 102a.

See also *Transactions of the Pathological Society*, vol. xxxvii. p. 54.

SARCOMA OF THE CEREBELLUM.

2501a. A Round-celled Sarcoma involving the inferior vermiform process of the cerebellum. The tumour has encroached upon the amygdalæ on

either side, and has scooped out for itself a cavity in the substance of either lateral hemisphere.

M. æt. 36. Admitted into Mark Ward on January 28, 1885. He had suffered from pain in the back of his head for twelve months. In the August preceding his admission he had constant vomiting, lasting for ten weeks. When first seen, he was torpid and sleepy. He had long suffered from fibroid phthisis in both lungs.

On February 28th, ophthalmoscopic examination revealed extensive neuro-retinitis, with great swelling and tortuosity of the vessels. There was considerable development of fibrous tissue along the course of the vessels. Both eyes were in a similar condition.

On March 2d, convulsions set in and lasted for five minutes. Afterwards there was albuminuria, renewed vomiting, and finally death occurred from asthenia upon April 18, 1885.

Microscopically the tumour is a round-celled sarcoma. Sections are preserved in Series lv. No. 102c.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 66. Cf. 2468a.

CARCINOMA OF CEREBELLUM.

2502b. A Primary Carcinoma of the left lateral hemisphere of the cerebellum. The upper and anterior borders of the left lateral hemisphere are the seat of a new growth of a soft gelatinous consistency. The right hemisphere is unaffected.

M. æt. 47. Admitted to Matthew Ward, April 18, 1886; had enjoyed good health until he suddenly became unconscious. On admission there was loss of power on the right side, and later on convulsive movements occurred on this side. The temperature rose to 101.4° Fahr. and vomiting was constant. Death took place on the third day. The new growth is a carcinoma; the cells are numerous and soft, for the most part of the squamous epithelial type, though here and there they become cylindrical. They are imbedded in alveoli of connective tissue, which are slight in comparison with the number of cells, so that the tumour is allied to the encephaloid cancers.

A section is preserved in Series lv. No. 105a.

See *Transactions of the Pathological Society*, vol. xxxvii p. 66.

CYST OF THE CHOROID PLEXUS.

2511a. A simple Cyst springing from the choroid plexus in the right lateral ventricle of the brain. The cyst appears to be the result of a cystic degeneration of the choroid plexus.

A young gentleman aged 21 had been noticed by his friends to be indolent and lazy for twelve months. On the night of his illness he ate a hearty supper at 10 P.M., and went to bed between 11 and 12 midnight. At 1.30 A.M. he was found semi-conscious and vomiting. He gradually became comatose, and died after a slight convulsion at 3.30 A.M. With the exception of a certain want of energy, he had always appeared to be in excellent health, and never had any fits.

At the autopsy, thirty-six hours after death, the abdominal and thoracic viscera were found normal. On opening the head, a very large quantity of clear serous fluid escaped. The vessels on the surface of the brain were deeply injected, and the convolutions were much flattened. All the ventricles were greatly distended with clear fluid, and on opening the right lateral ventricle the cyst was seen. It was as large as a pigeon's egg and had not burst.

A section of the tumour is preserved in Series lv. No. 96a.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 57.

Presented by W. Lenton Heath, Esq., M.B.

2521a. An unusually fine example of a Skull from a case of chronic

hydrocephalus. The fontanelles are seen to be widely open, and the bones in several places present patches of cranio-tabes.

From a male child aged 16 months. There were no signs of rickets. The brain was enormously dilated, and contained more than five pints of fluid in the lateral and third ventricles. The iter a tertio ad quartum ventriculum was closed; there did not appear to be any increase of fluid in the central canal. (In Case D.)

See *Transactions of the Pathological Society*, vol. xxxvii. p. 366.

PISTOL-WOUND OF THE CRANIUM.

2524a. A Skull with the Brain *in situ*, prepared in such a way as to show the course of a bullet fired upwards from the mouth. The bullet has traversed the hard palate, the ethmoid and the frontal portion of the brain, leaving a track along which a black rod has been passed. The bullet was extracted from an abscess which formed twenty days after the injury behind the coronal suture; the remains of it are still visible. The lateral ventricle was not opened. The layers of arachnoid around the aperture are adherent, but there is no other evidence of meningitis. The portion of the brain corresponding with the left frontal lobes, which were disorganised, appear to be contracting by a process of cicatrisation.

From a man aged 38, who shot himself through the mouth with a revolver. He survived the injury one month, and during this time remained in a state of stupor unless he was roused, when he was cheerful and possessed some memory.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 3.

Presented by C. B. Lockwood, Esq.

SERIES XXXIII.

DISEASES AND INJURIES OF THE EYE AND ITS APPENDAGES.

2641a. A Crystalline Lens of such an unusually dark colour that it may be classed as an example of the rare form of "Black Cataract." Chemical examination shows that it is free from iron pigment.

It was removed from a woman aged 43, who had always been myopic. She believed that she had received a blow upon her right eye sixteen years before admission to the Hospital. After the blow the eye gradually became dim. When seen, both eyeballs were prominent, and there was a dark striated opacity in the right. The right fundus could not be illuminated. The patient had cataract of the left eye. The right lens was removed without iridectomy.

See *Proceedings of the Ophthalmological Society*, vol. v. (1885), p. 111.

2651a. A Human Eye divided transversely to show a large flake of metal which is embedded in the outer side of the eyeball. All the structures of the eye are destroyed.

On admission the patient had a vertical wound a quarter of an inch long on the outer side of the cornea and extending into the ciliary region. There was prolapse of the iris. The eye was removed three weeks after the injury on account of the appearance of sympathetic irritation. The patient made a good recovery.

See *Albert Edward Ward Book*, 1885, No. 3210.

SERIES XXXIV.

DISEASES OF THE EAR AND ITS APPENDAGES.

2676a. A portion of the Left Temporal Bone with the Cerebral Membranes, from a case of suppuration of the middle ear. The bone is not necrosed. The small puncture was made during life for purposes of exploration; it opens into the groove of the left lateral sinus. The sinus itself was filled with the breaking-down, adherent, and decolorised clot which is suspended over the top of the membranes. This clot extended as far as the Torcula Herophili, and thence into the inferior longitudinal sinus for a distance of two inches. In one part in the centre of the clot there was a distinct circumscribed collection of pus. The left internal jugular vein was filled with a similar clot down to its opening into the innominate vein.

From a boy aged 13, who was admitted with otorrhœa following upon an injury to the left ear three months previously. The patient was drowsy but conscious; he had pain on left side of the head. The temperature rapidly rose, and he had a sudden attack of dyspnœa. He died with symptoms of pyæmia.

2682b. A large Aural Polypus removed by avulsion. Microscopical examination showed that it consisted of inflamed fibrous tissue covered with an epithelial coat.

M. æt. 26. The polypus extended as far as the edge of the meatus. It had probably been growing for many years, as the patient had suffered from otorrhœa as long as he could remember.

SERIES XXXV.

DISEASES AND INJURIES OF THE SKIN AND ITS APPENDAGES.

2701a. Numerous Scales of Epithelium shed by a patient suffering from Pityriasis rubra (dermatitis exfoliativa).

From a woman aged 24, who had been attacked twice previously with pityriasis. On the present occasion the patient had been ailing for five months. The attack lasted eight months. She was discharged with a smooth skin.

See *Elizabeth Ward Notes* for 1885, *s. v.* F. Alexander.

SERIES XXXVI.

DISEASES OF THE TESTICLE AND ITS COVERINGS, AND OF THE SPERMATIC CORD.

FATTY TUMOURS OF THE SPERMATIC CORD.

2812a. Two specimens of Lipomata of the Spermatic Cord. The tumours are lobulated masses of fat, apparently derived from the sub-

peritoneal tissue; they extend along the upper third of the cord in close relation with the spermatic artery.

Both specimens were obtained from an old subject brought in for dissection.

2812b. A good example of a fatty Tumour of the Spermatic Cord. A lobulated mass of fat has passed through the inguinal canal, and extends along the whole length of the cord to the testis.

From a subject brought for dissection.

SERIES XXXVII.

DISEASES OF THE SCROTUM.

2819a. A Pedunculated Tumour removed from the left side of the scrotum. It is about the size of a small orange, and when examined microscopically it was found to be a soft fibroma.

From a boy aged 17; the tumour had been noticed for a year before removal. It was painless, semi-translucent, tense, and elastic. It did not appear to be adherent either to the testis or skin.

See *Male Surgical Register*, vol. iv. (1885), No. 1964.

SERIES XXXIX.

DISEASES OF THE PROSTATE GLAND.

2837a. A Sagittal Section through a Bladder and Prostate Gland, to show the hypertrophy of the muscular fibres which lie between the orifices of the ureter. The third lobe of the prostate is much enlarged, and projects upwards into the bladder. The hypertrophy of the muscular fibres appears to be the result of this chronic prostatic enlargement. It has taken place secondarily to the elevation of the prostate, apparently for the purpose of doing away with the vesical pouch, which would otherwise be formed. The black rod is passed along the urethra; below the rod is seen the track of a lithotomy wound made the day before the death of the patient.

See *Male Surgical Register*, vol. ii. (1885), No. 2055.
A drawing is preserved in Series lvii. No. 331a.

SERIES XLI.

DISEASES OF THE OVARIES.

TUBO-OVARIAN CYST.

2924a. A Tubo-Ovarian Cyst from the body of a nulliparous single woman, aged 27. The uterus and left appendages are normal. The right ovary is converted into a thin-walled unilocular cyst 5 inches in

length, to which the ovarian ligament is attached. At the point of attachment traces of ovarian substance are seen. The Fallopian tube measures 9 inches in length, the outer half is distended as in ordinary hydrosalpinx; it is adherent and opens into the ovarian cyst, the opening having a diameter of 2 inches. No remains of the fimbriæ are visible. The adhesion of the tube to the cyst appears to be due to inflammation, a piece of omentum being attached to the right cornu of the uterus.

See *Transactions of the Obstetrical Society* for 1887.

Presented by Dr. W. S. A. Griffith.

SERIES XLII.

DISEASES OF THE UTERINE APPENDAGES.

HÆMORRHAGE INTO THE FALLOPIAN TUBES AND UTERUS.

2934a. A Uterus and its appendages. The uterine cavity contains a blood-clot, which extends along the Fallopian tubes, and on the right side projects beyond the fimbriated extremity. This projection of the clot is due to the narrowing of the calibre, owing to the action of the spirit, as it did not occur in the fresh specimen. The right ovary also contains a large blood-clot.

From a single nulliparous girl aged 18 years, who died from uncontrollable epistaxis with menorrhagia. No history of hæmophilia could be obtained. The source of the hæmorrhage was not detected by the microscope. The epithelial lining of the Fallopian tubes appeared to be complete; whilst the mucous membrane of the uterus showed only such a denudation of the epithelium as might have resulted from changes occurring after death.

See *Medical Post-Mortem Book*, vol. xii. p. 10.

2938a. Two specimens of Tubercular disease of the Fallopian Tubes. In the upper specimen, the right ovary, with its Fallopian tube and broad ligament, is alone preserved. The Fallopian tube is greatly thickened and enlarged for the outer three-quarters of its extent, and is filled with a caseating material. The ovary contains two well-marked blood-cysts.

From a woman aged 22, who had symptoms of advanced pulmonary phthisis, with tubercular ulceration of the bowels.

In the lower specimen a uterus with its appendages are preserved. The Fallopian tubes are greatly distended and filled with fine caseating material, except at their fimbriated extremities, which are filled with a thick cheesy pus. The uterus is healthy.

From a woman aged 19, who died with pulmonary phthisis. Sections of the Fallopian tubes, showing tubercle bacilli, are preserved in Series lv. No. 129a and b.

Presented by Percy Kidd, Esq., M.D.

CYSTIC TUMOURS CONNECTED WITH THE BROAD LIGAMENT.

2942a. A Cyst of the Broad Ligament (not parovarian), showing the thick septa which are often met with in multilocular ovarian cysts.

Presented by Dr. W. S. A. Griffith.

2942b. Portion of a Parovarian Cyst, showing a secondary cyst which has developed upon its wall. The Fallopian tube has been laid open; its posterior fimbriæ are seen as streaks radiating towards the ovary.

SERIES XLIII.

DISEASES OF THE UTERUS.

2943b. The Right Half of a congenitally anteflexed Uterus, with a portion of the Bladder and Vagina. The flexion, which causes the body to form nearly a right angle with the cervix, is situated about the junction of the cervix with the body. The uterus is rather small, the total length measuring $2\frac{1}{2}$ inches. The cavity of the body measures $1\frac{3}{8}$ of an inch, and the cervix $\frac{3}{4}$ of an inch in length. The anterior wall at the angle of flexion measures $\frac{1}{2}$ an inch in thickness, whilst the posterior wall measures $\frac{5}{16}$ of an inch.

No clinical details could be obtained. The other half of the specimen is preserved in the Hunterian Collection, No. 4590a.

Presented by the Royal College of Surgeons of England.

2951c. A vertical Section of the Bladder, Uterus, and Rectum. The uterus is retroverted by an ovarian tumour, which occupies the utero-vesical pouch. The pouch of Douglas has become obliterated as a result of adhesive perimetritis.

2963a. A portion of the Cervix Uteri and upper part of the Vagina. A pedunculated mucous polypus grows from the cervix and projects through the os tincæ downwards into the vagina.

2983a. A Section of a large Tumour which grew from the uterus. The tumour was a soft and rapidly growing myoma. Microscopic examination showed it to consist of the ordinary bands of a uterine fibroid with a large amount of adenoid tissue. It differs from the usual form of large fibroid in not consisting of a number of smaller tumours of similar structure.

2987a. A Uterus whose body is irregularly enlarged by the growth within its substance of numerous fibroids. Glass rods have been introduced in such a manner as to show the presence of at least three intramural tumours. The lower part of the cavity of the uterus is occupied by an intra-uterine growth, whilst from the postero-lateral aspect is suspended a pedunculated subperitoneal fibroid.

From a woman who died as the result of an accident. No history of uterine trouble was obtainable.

Presented by A. J. Weakly, Esq.

2996a. A Uterine Fibroid which has undergone calcification upon its outer surface. Its inner portion is degenerated and atrophied.

From the dissecting-room.

SERIES XLV.

DISEASES OF THE OVUM AND ITS MEMBRANES.

3042a. An example of Hydatid degeneration of the Chorion, with cyst-like formations, which are somewhat larger than usual.

Presented by Frank Oldfield, Esq.

SERIES XLVI.

DISEASES INCIDENTAL TO GESTATION.

3072c. A Uterus with the Ovaries and Fallopian Tubes, from a case of tubal pregnancy, which terminated fatally about the end of the second month. The cyst containing the fœtus has formed in the ampulla of the right tube, so that it lies in the pouch of Douglas. The cyst has ruptured, and a hæmatocele has thus been formed in the recto-uterine cavity, which has pushed the uterus forwards. The hæmatocele was enclosed above by the adhesion of the intestines. The right ovary is seen intact. The right tube has been laid open; it is much dilated and convoluted for two inches beyond the cyst. A red glass rod has been pushed into its fimbriated extremity. The half of the cyst, which has been divided to show the included fœtus, is seen lying by the side of the specimen. [In the first gallery in a flat case.]

From a woman aged 32, who had been married eleven years, but had borne no children and had no miscarriages. Ten weeks before death she felt pain in the right side, with shivering and discharge of blood per vaginam, the latter lasting three weeks. A week before death a decidua was discharged, and two days later the cyst burst suddenly whilst at stool. The patient died collapsed.

See *Martha Ward Book* for 1885, No. 89.

SERIES XLVII.

DEFORMITIES OF THE PELVIS.

3122a. The Pelvis of an adult female, in which, as the result of increased curvature of the spine, the brim is inclined so as to form nearly a right angle with the horizon.

3126a. An oblique Pelvis of Naegele, with the 4th and 5th lumbar vertebræ attached. The synostosis is on the right side of the pelvis, which is flattened, and the symphysis pubis is opposite the middle of the left ala of the sacrum. The right ala of the sacrum is imperfectly developed. The right ilium is united to the three upper segments of the sacrum corresponding to the normal articulation on the left side.

There is no sign of a joint below or in front, but above and posteriorly the line of junction is distinct.

Brim.	*Outlet.*
Conjugate, 3.75″.	Antero-posterior (to apex of sacrum), 5″.
Oblique right, 4.25″.	Transverse, 3.75″.
,, left, 3″.	Pubic angle, 71°.
Transverse, 3.75″.	
Right sacro-cotyloid, 1.5″.	
Left ,, ,, 3.75″.	
Sacro-sciatic notch, right, 2″.	
,, ,, ,, left, 4″.	

External Measurements.

Right post. sup. spine to left ant. sup. spine, 7.5″.
Left post. sup. spine to right ant. sup. spine, 6·5″.

From a woman aged 20, who had been married for three years; she was three times delivered by perforation of the fœtal head. In her last labour the vertex presented in the first position. She died of peritonitis on the eighteenth day after delivery. There was no history of any disease occurring during infancy or childhood, and she was not known by her friends to be in any way deformed.

See *Transactions of the Obstetrical Society*, vol. xxviii. (1886), p. 84. *Journal of Anatomy and Physiology*, vol. xxi. p. 163.

SERIES XLVIII.

DISEASES OF THE MAMMARY GLAND.

3146b. A small Papillomatous Tumour growing within a cyst of the breast, to which it is attached by a single small pedicle. Microscopical examination proved that the growth was a simple papilloma.

From a woman aged 39. The tumour was first noticed seven months previously. Ten or twelve minute growths similar to the intracystic growth here shown were found attached to the cyst wall.

See *Female Surgical Register*, vol. v. (1886), No. 429.

3159b. Portion of a Cystic Adenoma of the breast. It consists of a larger cyst, lying in the substance of the gland, on the wall of which a number of small cysts are growing. Upon microscopic examination the tumour was found to be composed of almost pure gland tissue. The cysts were lined with epithelium.

From a married woman aged 39. The tumour had only been noticed a week. It had a well-defined edge and was freely moveable. The veins were not enlarged: the nipple was normal.

See *Female Surgical Register*, vol. iv. (1886), No. 1342.

3161c. A Lobulated Fibroma removed from the breast. The tumour consists of a soft fibrous tissue, which is divided up into small lobules by septa of connective tissue. A fibrous capsule invests the whole mass. Microscopic examination showed that the tumour consisted of dense fibrous tissue without any trace of gland substance.

From a woman aged 28, in whom the tumour had been growing for two years. After removal she made a good recovery.

See *Female Surgical Register*, vol. ii. (1885), No. 563.

3163a. A portion of a large Sero-cystic Sarcoma of the female breast, The cyst wall has been separated from the intracystic growth, and rods have been placed between the two to show that for a greater part of their extent they are not fused. Microscopic examination showed that the growth was a fibro-sarcoma.

From an unmarried lady, aged 49, who had one-tenth of albumin in her urine at the time of the operation. The tumour had been growing for seven years. After removal it weighed seven pounds. The patient made an excellent recovery.

Presented by J. Langton, Esq.

SERIES L.

GENERAL PATHOLOGY.

3216c. Section of a Leg which has undergone an unusual hypertrophy of the fibrous tissue in all its parts. It is therefore an example of spurious elephantiasis.

From a woman aged 28, who had never been out of London. The leg began to increase in size 3½ years before admission. The swelling commenced in the big toe, and gradually extended as high as the knee. There was a good deal of eczema. The limb was subsequently amputated. Microscopic examination only showed a general increase in the fibrous tissue of all parts.

See *Female Surgical Register*, vol. iii. (1885), No. 2080.

3251a. A Fatty Tumour removed from the sole of the foot of a child aged thirteen months, in whom it had been growing since birth. The tumour is not encapsuled, and consists of ordinary fatty tissue enclosed in a fibrous framework. A similar tumour was removed from the sole of the opposite foot.

Casts of the feet are preserved in Series lvi. No. 211a. See *Pathological Society's Transactions*, vol. xxxvii. p. 450.

Presented by C. B. Lockwood, Esq.

3280a. A Pedunculated Fibrocellular Tumour, which had been growing for more than five years from the right ischio-rectal region. The tumour is of the size of a small orange, with a complete covering of skin, except where the pedicle has been divided. On section it presents the usual appearance of a yellowish matrix intersected by white fibrous bands.

From a married woman, aged 25. The tumour was inconvenient, but not painful. See *Female Surgical Register*, vol. iv. (1886), No. 27.

3321a. A Pedunculated Warty Growth removed from the skin round the margin of the anus. Microscopic examination showed it to be a typical example of a simple papilloma.

Removed from a woman in the Surgery; no further history could be obtained.

RODENT ULCER.

3324a. A Rodent Ulcer removed from the face of a man. It extended down the side of the nose almost to the mouth. The irregular and rounded edges present many of the features of an epithelioma. Upon microscopic examination, however, it was found to be a true rodent ulcer, with a small-celled growth, but no cell nests.

From a man aged 54; a small pimple was first noticed sixteen years previously. Sections are preserved in Series lvi. No. 171a.
See *Male Surgical Register*, vol. i. (1885), No. 1085.

3329a. A Horny Tumour removed from the dorsum of the left hand of a labouring man, in whom it had been growing for twelve months. It was central in position and very tender to the touch. There was pain in the shoulder and axilla, but no enlarged glands could be felt.

Upon microscopic examination it was found to present the characters of an epithelioma.

Presented by Dr. George Wilks.

3371a. A Dermoid Cyst removed from the forehead of a young man aged 20. It was extremely adherent to the bone, and was situated below the corrugator supercilii muscle. It contained the fatty substance preserved in the next specimen with a few hairs. Before removal it was described as a round translucent swelling, measuring half an inch in diameter, the skin being moveable over it. It was congenital.

See *Male Surgical Register*, vol. iv. (1886), No. 850.

3371b. The contents of the preceding Congenital Cyst, situated on the bridge of the nose. It consists of fat containing a large quantity of stearates and margarates. It is solid at ordinary temperatures, but becomes fluid at 98.6° F.

3371c. A Tumour of cystic nature which was removed from the forehead of a child aged five weeks. It was found upon microsopic examination to be a rapidly growing fibroma.

See *Female Surgical Register*, vol. i. (1885), No. 1091.

3375c. A Congenital Barren Cyst or Hygroma which was removed from the neck of a child. The walls are thin, and in parts but little thicker than tissue paper.

Presented by C. Brook, Esq., Lincoln.

SERIES LI.

VARIOUS INSTRUMENTS AND SUBSTANCES PRODUCING INJURIES.

3383a. Cast of a Stone removed from an abdominal cavity.

"A sailor, aged 45, of good health, had suffered from stricture of the urethra for some years, and for the consequent retention had been in the habit of passing a glass bottle, 3 inches in diameter, up the rectum, and usually gained relief from it. One

day (June 13th) retention of urine came on, and not having his bottle at hand, a belaying pin was passed into the bowel without having the desired effect. He then went on shore, and picking up a pebble the size of the cast, he oiled it and passed it into his bowel. He relieved his distress by riding; but next day he began to feel inconvenience, and a physician was called in, who made ineffectual attempts to remove the stone. One of the many measures was the bending of a piece of flat iron into the shape of a pair of forceps, with which attempts at extraction were made. During this operation it is supposed that the intestine was ruptured, and he now began to suffer acute pain. On the 15th the vessel sailed for Boston, and at 2 p.m. on the 17th, Dr. William Thorndike, of the City Hospital, saw the patient. His general appearance was at that time one of intense suffering. The abdomen was quite tumid and painful, with vomiting and hiccough. The rectum was considerably dilated, and on passing the hand into it a laceration was felt some six inches from the anus. By passing in the hand as far as the elbow the stone could be touched, but it could not be felt by the hand externally. Abdominal section was immediately performed, and the stone most easily removed through an incision to the left of the median line. It lay loose amongst the coils of intestine, and some ounces of a bloody serum were removed at the same time. The vessel sailed on June 19th, and the patient was removed to the City Hospital, where he remained till July 15th. He then discharged himself without leave. He was heard of to the effect that the last stitch came away from the wound about the middle of August, and he subsequently recovered so far that he was able to work in a factory."—*Vide* Path. Cat. R. C. S., vol. i. pp. 55, 56.

Presented by the Royal College of Surgeons of England.

3391a. Portion of a Pipe Stem removed from the interior of a child's mouth, where it had been embedded for two years.

M. æt. 4. Two years ago the boy fell on his face while holding the stem of a pipe in his mouth. His father, noticing the pipe sticking out of the boy's mouth, drew it out, but did not notice at the time that the pipe was broken. He observed a wound on the right side of the mouth, just about the junction of the upper alveolar arch with the palate; this bled profusely, and the parts around became swollen. He took him to the Great Northern Hospital, where the wound was probed, but no foreign body discovered. He could hardly eat anything for a week, and for some time after that had to live on slop food. There was profuse salivation, and the wound discharged pus for about a month. A fortnight after accident he was taken to the Royal Free Hospital. Poultices were applied behind the jaw, where a swelling had appeared. The mouth in the situation of the wound had remained red and swollen ever since, but there had been no discharge of pus after the first month.

On May 13th his father noticed the stem of a pipe projecting about a quarter of an inch from the site of the old wound. He was brought to the Hospital on May 20th, when the pipe-stem was found to be projecting freely and quite loose. It was easily removed.

SERIES LII.

URINARY CALCULI.

46c. Portions of a Calculus removed from the kidney by the operation of nephro-lithotomy. The fragments consist of uric acid encrusted with phosphates.

The kidney is preserved in Series xxviii. No. 2392a.

52d. Portions of a Branched Calculus removed with a kidney by the operation of nephrectomy. It weighed 414 grains, and consists chiefly of phosphates.

From Series xxviii. No. 2372d.

54a. A very large Calculus removed from the bladder by the suprapubic operation. The stone is irregularly oval. It measured 11½ inches in circumference in its long diameter and 9½ inches in its short diameter. It weighed 24½ ounces immediately after removal. The lower portion of the stone on its under surface is tuberculated, perhaps from the flow of urine over it, whilst the upper part of the under surface was attached to the bladder wall by a calcareous deposit. An analysis made by Dr. Lapraik shows that it consists of a nucleus of oxalate of lime surrounded by uric acid and oxalate of lime, the outer layers consisting of earthy phosphates with a small quantity of calcium carbonate.

From a soldier aged 43, who had only suffered from active symptoms of bladder trouble for ten weeks before admission. For some time previously, however, he had noticed that when his bowels were constipated and he had to undergo prolonged exertion, he passed water of a brighter colour than usual, with slight pain. He never had any hæmaturia. Per rectum a large and hard tumour could be felt in the bladder. After the removal of the stone the patient made a good recovery.

See *Male Surgical Register*, vol. ii. (1886), No. 1041; and the *Lancet*, vol. ii. (1886), p. 244.

A cast of the stone is preserved in Series lvi. No. 213a.

URIC ACID CALCULUS DEPOSITED ON AN IMMATURE BILHARZIA.

189a. A small Vesical Calculus passed by a patient who subsequently suffered from parasitic hæmaturia. The stone weighs three grains; it consists chiefly of uric acid.

From a man aged 61. The calculi were passed nearly seven years before the first attack of hæmaturia. The patient was subsequently found to be infested with the Bilharzia hæmatobia. It appears possible that the nucleus in this case may consist of an embryo case of the Bilharzia.

For further details of the case see *St. Bartholomew's Hospital Reports*, vol. xxi. (1885), p. 89.

SERIES LIII.

CALCULI AND OTHER CONCRETIONS FORMED IN THE DIGESTIVE ORGANS.

244b. A Salivary Calculus removed from Stenson's duct. It measures 1 1/16 inch in length and weighs twelve grains. The patient had only felt pain and noticed a swelling in the region of the parotid gland for three weeks before its removal.

299a. A Crystalline Concretion weighing fifty-seven grains which was obtained from the colon of a cod-fish. Chemical analysis showed it to consist of phosphate of magnesium with a little organic material.

Presented by P. S. Abraham, Esq., M.D.

SERIES LV.

PATHOLOGICAL MICROSCOPIC SPECIMENS.

2c. A longitudinal Section through a portion of Bone which has undergone necrosis.

2d. A transverse Section through a portion of Bone which has undergone necrosis.

3c. A longitudinal Section of the thickened Bone lying immediately beneath a chronic ulcer of the leg. The bone is sclerosed.

Prepared by E. L. Ormerod, Esq., M.D.

3d. Sections of Bone from a case of osteitis deformans. The sections show that the entire bone, even up to the periosteum, has undergone a process of rarefaction. The Haversian canals have merged one into another, until they appear to be large ragged gaps, whose edges are rendered sinuous by Howship's lacunæ. The concentric arrangement in the Haversian systems has entirely disappeared, and has been replaced by a much more complex system of curving and interlacing rows of bone corpuscles. The lacunæ are small and without canaliculi: the Haversian canals have in many cases dwindled to the most minute dimensions. The large spaces formed by the fusing of the Haversian canals, which almost resemble the cancellous tissue of membrane bones, are occupied by embryonic medulla. This medulla consists of a very delicate fibrous reticulum containing developing cells of every form, from simple round cells like indifferent tissue, to branched corpuscles as complex as a ganglion cell. In many cases the branched cells appear to form part of the reticulum, as is the case in adenoid tissue. Numerous multinucleated cells lie in the fibrous meshes, and in some instances they appear to be forming for themselves Howship's lacunæ.

From Series i. No. 74d.
See *Transactions of the Pathological Society*, vol. xxxvii. p. 369.

3e. Section of Dry Bone from a femur affected with osteitis deformans.

From Series i. No. 74c.

6a. Portion of Chronically Inflamed Bone. The inflammation began in the periosteum and was apparently of syphilitic origin.

From Series i. No. 347a.

7a. Portion of the Articular Surface of the Humerus. The bone has undergone a fibrous change.

From Series i. No. 312b.

9a. A Section of an Enchondroma which grew from the scapula of a man.

21a. Portion of a Tumour which grew in the centre of the shaft of a femur. The growth consisted of a friable upper portion, which is a

round-celled sarcoma, and a more dense lower part, in which the sarcomatous tissue is intermingled with a large quantity of fibrous tissue. The latter portion is undergoing a process of calcification. No myeloid cells are seen.

From Series i. No. 475a.

41a. A typical specimen of an Encephaloid Cancer, which grew from the superior maxilla.

52b. Section of a Recurrent Cystic Epithelioma springing from the lower jaw. There are numerous branching columns of epithelium in a fibrous matrix. The outermost ones are columnar and resemble those of the rete Malpighii. In the centre of the columns cavities are in process of formation by the disintegration of the most central cells. There are no cell-nests.

From Series i. No. 486a.

58a. A Primary Endothelioma commencing in the pericardium.

See also Nos. 52a and 71b; and *Transactions of the Pathological Society*, vol. xxxv. p. 372.

63a. The Inner Coat and a portion of the Middle Coat of the Aorta, from a case of dissecting aneurism. It consists of elastic and fibrous tissues, with a small proportion of muscle.

63b. The Outer Coat and a portion of the Middle Coat of the Aorta from the same case as the preceding. It consists of loose areolar tissue which has undergone some amount of cell-infiltration as the result of inflammation. Towards its deeper layers some elastic and muscular fibres are visible.

From Series viii. No. 1466a.
See also *St. Bartholomew's Hospital Reports*, vol. xxi. p. 211.

67c. A Section through a Tubercular Ulcer of the Epiglottis, to show the giant cells and bacilli.

Presented by Percy Kidd, Esq., M.D.

68a. A Section of a Lung affected with emphysema.

68b. A Section of a Bronchial Gland in which the mycelium of aspergillus has been accidentally introduced. The mycelial threads lie quite superficially, and not, as in specimen 93d, in the substance of the organ.

Presented by Percy Kidd, Esq., M.D.

69b. A Section of a Lung which has undergone compression as a result of chronic pleural effusion.

69c. A Section of a portion of Lung which was the seat of an infarct.

70b. Section of Lung affected with tubercle, to show the giant cells.

70c. A Section of the Lung of a Guinea-Pig which had been inoculated with tubercle, showing the tubercle bacillus.

Presented by Percy Kidd, Esq., M.D.

70d. Section of the Lung of a Child, to show the effects of acute miliary tuberculosis.

Presented by Percy Kidd, Esq., M.D.

70e. The Lung of a Mouse infected with micrococcus tetragonus, resulting from the inoculation of tuberculous material.

Presented by Percy Kidd, Esq., M.D.

70f. A Section of the Lung of a Mouse which had been infected with anthrax. It shows the bacillus anthracis.

Presented by Percy Kidd, Esq., M.D.

70g. Section of a Lung affected with fibroid phthisis.

71b. Secondary Endothelioma of the Lung. The primary growth occurred in the pericardium.

See Nos. 52a and 58a.
See *Transactions of the Pathological Society*, vol. xxxv. p. 372.

71c. Section of a Lung infiltrated with a primary round-celled sarcoma. The growth commenced in the connective tissue round the bronchus.

71d. Section of the Lung from a case of caseous pneumonia. Groups of bacilli are visible.

Presented by Percy Kidd, Esq., M.D.

71e. Section of a Lung showing a miliary aneurism, which has resulted from the formation of a vomica.

Presented by Percy Kidd, Esq., M.D.

76a. Section of a Tongue carried through a tuberculous nodule upon its surface.

76b. Section of a Tongue which was the seat of a tubercular ulcer. It is stained to show the tubercle bacillus.

Presented by Percy Kidd, Esq., M.D.

79c. Sections of a typical Scirrhous Carcinoma of the Œsophagus. The cells are mostly spheroidal; the fibrous tissue forms distinct alveoli.

See *Male Surgical Register*, vol. ii. (1885), No. 2773.

82b. A Section of a Tumour from the Parotid Gland, consisting of almost typical myxomatous tissue.

82c. A Parotid Tumour composed of round sarcoma cells, with a few cartilage cells intermixed.

82d. A Parotid Tumour composed of a basis of connective tissue, in which are imbedded small masses of hyaline cartilage.

83c. A Lymphangioma which occurred upon the inner side of the thigh of a boy. It consists of a large number of dilated lymphatic vessels.

Presented by S. K. Alcock, Esq.

83d. Section of the Mesenteric Gland of a man who died of tubercular phthisis. The bacilli are extremely numerous.

Presented by Percy Kidd, Esq., M.D.

84c. Section through the Mucous Membrane of the Stomach of a patient who had chronic gastritis with cirrhosis of the liver.

86g. Section of a portion of the Mucous Membrane of the Ileum, from a case of typhoid fever at an early period. The Peyer's patch is seen to be inflamed.

87g. Section through the Mucous Membrane of a Rectum affected with adenoid carcinoma. The gland tubes are fairly well formed in parts, and are lined with short cylindrical epithelium; in other parts the growth is distinctly cancerous.

87h. A typical specimen of Cylindrical-celled Carcinoma of the Rectum.

87i. Section through a portion of Rectum which had been greatly thickened as a result of chronic syphilitic ulceration.

The intestine is preserved in Series xix. No. 2057a.

90q. Section of the Liver from a case of hypertrophic cirrhosis.

90r. Section of a Primary Sarcoma of the Thyroid Gland.

From Series xxvi. No. 2319c. Cf. Nos. 95c and 102a.

91a. A Section of Kidney affected with amyloid degeneration. The kidney is dyed with methyl violet, which stains the amyloid substance of a brighter colour than the other parts.

Presented by A. Lyndon, Esq.

91b. Section of a Kidney which has undergone fatty degeneration as a result of phosphorus-poisoning. The fatty particles are stained black with osmic acid.

93d. Sections of the Kidney of a Rabbit infected with aspergillus mycosis. The spores of the aspergillus fungatus were injected into the auricular vein. Death occurred on the third day afterwards. Mycelial threads similar to those seen in the present section could be detected in the kidneys, lung, and liver.

Cf. Section 68b.

93e. A Section of the Kidney of a Guinea-Pig which had been infected with anthrax. The bacillus anthracis is chiefly seen in the cortical portion of the organ.

The three preceding specimens were presented by Percy Kidd, Esq., M.D.

93f. A Section of the Kidney of a Guinea-Pig which had been inoculated with anthrax. The anthrax bacillus is well seen.

Presented by T. J. Bokenham, Esq.

95a. Section of a Kidney infiltrated with an alveolar sarcoma.

95b. Section of a Kidney infiltrated with epithelioma.

95c. Kidney infiltrated with sarcomatous growth.

From same case as the specimen preserved in Series xxvi. No. 2319c. Cf. Nos. 90r and 102a.

96a. Section of the Wall of a Cyst which grew in the lateral ventricle of the brain.

From Series xxx. No. 2511a.

96b. Section of a Psammoma. The tumour grew from the dura mater, and involved the superior frontal gyrus of the right side.

From Series xxx. No. 2466b.

96c. Section of a Tumour springing from the dura mater. The tumour is a fibro-sarcoma.

From Series xxx. No. 2466a.

100b. Section of a typical Gliosarcoma.

102a. An Oval-celled Sarcoma of the cerebral cortex. The primary growth occurred in the thyroid.

Cf. Nos. 90r and 95c. From Series xxx. No. 2499b.

102b. Sections of a Tumour of the Brain. It is of a fibro-sarcomatous character.

From Series xxx. No. 2499b.

102c. Section of a Tumour of the Cerebellum. It is a round-celled sarcoma.

From Series xxx. No. 2501a.

105a. Section of a Tumour of the Cerebellum. The new growth is a carcinoma, the cells being numerous, soft, and for the most part of the squamous epithelial type, though they are occasionally cylindrical. The cells are embedded in alveoli of connective tissue, which are small in comparison with the number of cells. The tumour is therefore allied to the encephaloid carcinomata.

From Series xxx. No. 2502b.

107e. Section of the cervical portion of a Spinal Cord, to show the ascending degeneration which resulted from an injury to the 7th dorsal vertebra.

Presented by H. L. Jones, Esq., M.B.

116c. Section through a Hairy Mole which was situated upon the face.

121c. Section through a Cystic Sarcoma of the Testis.

127a. A Section of an Ovary, showing a cancerous infiltration of the stroma. The cancer is of the encephaloid type.

Cf. Nos. 129c and d. From Series xliii. No. 2977.

127b. Section of an Ovary infiltrated with a round-celled sarcoma.

Cf. No. 130n. From Series xliii. No. 3009.

127c. Section of an Ovary infiltrated with a carcinomatous growth.

Cf. Nos. 129e and 130(o). From Series xliii. No. 3010.

129a. Section through a Fallopian Tube which was the seat of tubercular ulceration.

From Series xlii. No. 2938a.

129b. Section through the same Fallopian Tube as in the preceding specimen. This section is stained to show the numerous tubercle bacilli.

Presented by F. W. Andrewes, Esq.

129c. A Section through a portion of Fallopian Tube infiltrated with a cancerous growth.

Cf. Nos. 127a and 129d. From Series xliii. No. 2977.

129d. A portion of a Uterine Growth. It consists of myxomatous tissue with a considerable fibrous stroma.

Cf. Nos. 129c and 127a. From Series xliii. No. 2977.

129e. Section of a Fallopian Tube infiltrated with carcinoma.

Cf. Nos. 127c and 130(o). From Series xliii. No. 3010.

130i. Section through a Cervix Uteri which is invaded by a spheroidal-celled carcinoma.

130k. Section of the Fundus of a Uterus, showing an infiltration of small cells with a few epithelial cells. The growth is probably an epithelioma.

See Series xliii. No. 3004.

130l. Section of the Body of a Uterus infiltrated with encephaloid cancer.

From Series xliii. No. 3008.

130m. Section of the Cervix Uteri near the internal os. The tissue is infiltrated with encephaloid cancer. From the same case as the preceding section.

From Series xliii. No. 3008.

130n. Section of the Posterior Wall of the Body of a Uterus infiltrated with a round-cell sarcoma.

Cf. No. 127b. From Series xliii. No. 3009.

130o. Section of the Body of a Uterus infiltrated with carcinoma.

Cf. Nos. 127c and 129e. From Series xliii. No. 3010.

130p. Section of the Fundus Uteri infiltrated with carcinoma.

From Series xliii. No. 3012.

141a. Section of a Cystic Adenoma of the Breast. The growth has the characters of a fibro-adenoma, the ducts of the gland having undergone cystic degeneration.

147. A Microscopical Preparation of a Scirrhous Carcinoma of the Breast.

Prepared by H. E. Symonds, Esq.

149c. Section of a typical Scirrhous Cancer of the Female Breast in an actively growing condition.

153d. Section of a Female Breast affected with colloid cancer.

154b. A Section through the Nipple of a Female Breast affected with eczema. The gland tissue is infiltrated with scirrhous cancer.

154c. Sections of Eczema of Nipple, from a case in which there was induration and scirrhus of the breast. The cells of the surface epithelium are loosened from one another, and are in parts completely destroyed. The corium and subjacent tissues are infiltrated with a small-celled growth. The epithelium of the ducts is proliferating. The tumour on section is seen to be a typically spheroidal-celled carcinoma.

155b. The Blood of a Guinea-Pig which had been infected with anthrax. The bacillus anthracis is well seen.

155c. The Blood of a Man affected with anthrax. The preparation is stained so as to show the bacillus.

Presented by E. H. Hankin, Esq.

155d. Section through a Malignant Pustule. The specimen is stained to show the anthrax bacillus.

Presented by E. H. Hankin, Esq.

155e. An Artificial Cultivation in gelatin peptone of the bacillus anthracis.

Presented by T. J. Bokenham, Esq.

158a. Section of a Congenital Tumour removed from the back of a boy. It consists of hyaline and cellular cartilage containing small masses of bone. The cartilage is surrounded by loose cellular tissue containing much fat.

From Teratological Series, iii. No. 3524b.

162b. Section of a typical soft Fibromatous Tumour removed from the forehead of a child.

163a. Section of a Round-celled Sarcoma.

163b. Section of a typical Spindle-celled Sarcoma removed from the thigh of an adult.

163c. Section of a typical Mixed-cell Sarcoma.

163d. Section of a Myeloid Sarcoma.

163e. Section of a typical Alveolar Melanotic Sarcoma.

163f. Section of a Chondrifying Sarcoma.

172a. Section through an Epithelioma springing from the pulp of the distal phalanx of a finger. The specimen shows numerous processes of epithelium containing cell-nests.

186. Crystals of Urate of Soda prepared for microscopic examination.

186d. Crystals of Uric Acid obtained from a patient suffering from pleurisy.

187. Crystals of Cholestearin prepared from a gall-stone.

188. Crystals of Carbonate and Oxalate of Lime. The crystals are cubical and dumb-bell shaped.

189. Section of a small Oxalate of Lime Calculus.

190. Crystals of Oxalate of Lime.

SERIES LVI.

CASTS AND MODELS OF DISEASED OR INJURED PARTS.

54a. Cast of the Left Foot, to show the deformity occurring immediately after a fracture of the fibula, with dislocation of the tibia forwards.

See *Male Surgical Register*, vol. v. (1885), No. 3033.

69b. Cast of the Left Knee, showing the situation of an intermuscular synovial cyst.

See *Male Surgical Register*, vol. v. (1886), No. 239.

85e. Cast of the Feet of a boy aged 4 years, who had talipes equino-varus of both feet to an extreme degree. A wedge-shaped piece of bone was removed from either tarsus.

See *Male Surgical Register*, vol. iii. (1886), No. 3705*.

131a. Cast of the Left Groin of a man, showing a large femoral hernia, which was easily reducible. The hernia had existed for forty-two years. The crural ring admitted three fingers.

See *Male Surgical Register*, vol. iii. (1886), No. 3706*.

144c. Cast of the Left Hand of a patient seven months after section of the ulnar nerve. The muscles are extremely atrophied and the fingers are somewhat "clawed."

144c(1). Cast of the Left Hand of the same patient a year after the operation of secondary suture. The muscles are almost completely regenerated.

See *Darker Ward Book*, vol. viii. p. 380.

144d. Cast of the Right Hand of a patient eighteen months after division of the ulnar nerve. The muscles are wasted and the hand is typically clawed.

See *Male Surgical Register*, vol. iii. (1884), No. 3156, and vol. iii. (1885), No. 3332.

144e. Cast of the Right Hand four years after section of the ulnar nerve, from a case in which the median nerve was also wounded. The fingers are spasmodically flexed.

See *Male Surgical Register*, vol. iv. (1885), No. 3480.

144f. Cast of the Left Hand of patient nine months after division of the median nerve. The opponens and abductor pollicis are completely wasted, and the ball of the thumb is much flattened.

See *Female Surgical Register*, vol. iii. (1885), No. 1332.

178a. Cast of the Left Foot, from a patient who had a perforating ulcer in connection with tabes dorsalis.

See *Male Surgical Register*, vol. v. (1885), No. 3017.

211a. Casts of the Feet of a Child who had symmetrical fatty tumours upon the soles over the inferior surface of the calcanean tuberosity.

The tumours are preserved in Series l. No. 3251a.

213a. Cast of a very large Oval Calculus, removed from the bladder of a man aged 43, by the high operation.

The calculus is preserved in Series lii. No. 54a.

SERIES LVII.

DRAWINGS OF DISEASED AND INJURED PARTS.

12a. Drawings of the Right Humerus, condylar surface of the Femur and Knee-Joint, from an unusual case of ulceration of the articular ends of bones. (T. Godart.)

The specimens are preserved in Series i. Nos. 312b, c, and d.

28a. Drawing of a case of Central Sarcoma of the shaft of the Femur. Fig. 1 represents the tumour as it could be felt before the amputation of the limb. (T. Godart.)

Fig. 2 represents the tumour in the position it occupied within the femur.

Fig. 3 represents a portion of the femur with the tumour removed to show the excavation it had effected within the bone, and the irregular line of the spontaneous fracture.

The tumour is preserved in Series i. No. 475a.

These drawings are reproduced in the *Transactions of the Pathological Society*, vol. xxxvii. pl. xiv.

45s. The Left Thigh of a man aged 53, who was suffering from Charcot's disease of the hip-joint. (T. Godart.)

See *Male Surgical Register*, vol. v. (1886), No. 1209.

45t. Drawing of the Left Knee-Joint of a patient who had osteo-arthritis. (T. Godart.)

The joint is preserved in Series ii. No. 693a.

45u. Drawing of the Inner Side of the Thigh of a patient who had an intermuscular synovial cyst in connection with the knee-joint. (T. Godart.)

Cf. Nos. 45 b and c.

73a. Photographs of the Back and Feet of a patient who was affected with myositis ossificans.

C. A. M., a boy aged 7, presented a series of lumps, apparently bony, along the margin of each latissimus dorsi, one in the left trapezius a little below the occiput, another in the right trapezius midway down the neck, and a third over the right supraspinous fossa. Another, in the substance of the right triceps, reached from the posterior margin of the axilla nearly to the insertion of the deltoid. A saddle of bone covered the erector spinæ on either side, and rendered the boy incapable of stooping. The right shoulder-joint was quite fixed, but there was a little movement in the left. There was no ossification of any of the muscles on the anterior surface of the trunk.

There was no history of syphilis; parents healthy; grandparents on male side rheumatic. See also the *British Medical Journal*, vol. ii. (1886) p. 1026.

Presented by T. Sympson, Esq.

105b. Drawing of an Aneurysm of the Abdominal Aorta which ruptured externally. (T. Godart.)

See *Post-Mortem Book*, vol. xii. p. 262.

114a. Drawing of a Larynx in a state of acute phlegmonous ulceration. (T. Godart.)

See *Medical Post-Mortem Book*, vol. xii. p. 139.

175c. Drawing of the Outer Surface of the Gum, to show the results of hypertrophy occurring after an attack of diphtheria in a girl aged 19. (T. Godart.)

See *Female Surgical Register*, vol. v. (1886), No. 1043.

175d. A Drawing of a Case showing Hypertrophy of the Mucous Surface of the Lips. (T. Godart.)

178c. Drawing to show an advanced condition of Ichthyosis linguæ. (T. Godart.)

189f. Drawing of a Pedunculated Fibrous Tumour springing from the mucous membrane of the mouth in the neighbourhood of the upper incisor teeth. (T. Godart.)

From a man aged 45, in whom the tumour had been growing for a period of twenty-five years.

The tumour is preserved in Series xii.

247a. Drawings of various types of Typhoidal Evacuations, illustrating the remarks of Sir Dyce Duckworth upon the occurrence of green stools in enteric fever. (T. Godart.)

See *St. Bartholomew's Hospital Reports*, vol. xxi. (1885), p. 110.

260g(i). A Photograph of a Case of Diaphragmatic Hernia, which is represented in drawing 260g.

Presented by C. A. Parker, Esq.

260i. Drawing of a Case of Multiple Intussusception. (T. Godart.)

See Series xx. No. 2181a.

298b. Drawing of a Man with a very large Goître, probably carcinomatous. (T. Godart.)

See *Male Surgical Register*, vol. ii. (1886), No. 3660*.

331a. Drawing of a Section of the Bladder to show an unusually well-marked development of the inter-uretal fold, which has caused the development of a large prostatic pouch. (T. Godart.)

The specimen is preserved in Series xxxix. No. 2837a.

338a. Drawings of the Face and Extremities of a young woman who had general neuritis, probably of peripheral origin. The skin shows the changes characteristic of chronic nerve lesions. (T. Godart.)

See *Faith Ward Book* (1885), p. 1463.

388d. Drawing of a destructive Ulceration of the Distal Phalanx of the Left Fore-finger, resulting from the division of the median nerve. The adjacent sides of the thumb and middle finger are also ulcerated, but to a less extent. (T. Godart.)

395e. Drawing of a recurrent Melanotic Sarcoma which originally grew from the subconjunctival tissue of the eyeball in a woman aged 70. (T. Godart.)

See *Alexandra Ward Book* for 1886, No. 3.

395f. Drawing of a Lacrymal Abscess which had existed for fourteen years. From a patient aged 41, who had suffered from syphilis, rheumatism, and diabetes. (T. Godart.)

See *Albert Edward Ward Book* for 1886, No. 1104.

438b. Drawing of a Leg with large circular Ulcers, which have the appearance of broken-down gummata. Under the action of iodide of potassium given internally, and the local application of lotio nigra, the ulcers rapidly healed. They were therefore regarded as syphilitic in origin. (T. Godart.)

See *Male Surgical Register*, vol. iii. (1885), No. 3337.

470d. Drawing of a Rodent Ulcer occurring upon the face of a woman. The unusual amount of hypertrophy gives to the growth the appearance of an epithelioma. (T. Godart.)

470e. Drawing of a Rodent Ulcer invading the right orbit. (T. Godart).

From a man aged 76. Four months previous to admission the patient had torn his lower eyelid with a rusty nail. The edges of the torn surface assumed the appearance of a rodent ulcer, the diagnosis being subsequently confirmed by microscopical investigation. The scars of a long-standing ulcer of the same nature are seen upon the left side of the patient's face.

See *Albert Edward Ward Book* (1886), No. 1038.

470f. Drawings of the Dorsal Aspect of the Left Fore-arm of a man who worked as a wax-refiner. A large recurrent epitheliomatous growth occupies the whole surface. (T. Godart.)

470g. Drawing of the Palmar Aspect of the Fore-arm from the same case as the preceding. (T. Godart.)

See *Male Surgical Register*, vol. v. (1886), No. 1603.

516c. Drawing of a Sagittal Section of the Female Genital Organs, from a case of purulent anterior perimetritis. (T. Godart.)

E. W., æt. 27, mother of two children, the last of which was born twenty months before admission. The patient had always been ill since her last confinement, the symptoms gradually progressing.

At the autopsy a sago spleen was found; the left kidney was in an early stage of suppuration.

516d. Superficial view of the Female Pelvis from a case of anterior iliac right lateral and psoas parametritis occurring on the right side. (T. Godart.)

516e. Drawing of a Sagittal Section of the Female Genital Organs, from a case of purulent anterior parametritis. (T. Godart.)

M. M., æt. 27, mother of five children, the last born two years previously. Catamenia regular except during the last two months. No history of abortion. Symptoms of parametritis set in suddenly on October 20, 1885. The patient died of exhaustion on January 14, 1886. At the autopsy a large abscess was found between the bladder and cervix uteri, distending the right broad ligament, and extending into the right iliac fossa and sheath of the psoas. The abscess involved the right sacro-iliac joint. The cause of the parametritis could not be ascertained.

516f. Drawing of a Sagittal Section of the Female Genital Organs, from a case of retro-uterine perimetritis complicating cancer of the posterior wall of the cervix. (T. Godart.)

A. C., æt. 52. Two years since the climacteric. The patient had been in good health until three weeks before admission, when she developed symptoms of cancer of the uterus. She died rather suddenly.

516g. Drawing of the Uterus and its appendages, from a case of myxœdema. (T. Godart.)

516h. Drawing of a Sagittal Section of a Retrouterine Perimetritis. The uterus forms part of the abscess wall; a fistulous passage opens into the pouch of Douglas. (T. Godart.)

The specimen is preserved in Series xix. No. 2055a.

519a. Drawing of a case of Pregnancy in the undeveloped horn of a double uterus. (T. Godart.)

See *Transactions of the Obstetrical Society*, vol. xxviii. p. 70.

531d. Drawing of a case of Eczema of the Left Nipple associated with scirrhus of the breast. The cancer was undergoing atrophy. It occurred in an anæmic woman aged 48. (T. Godart.)

534b. Drawing of the Leg of a Woman upon whom islets of skin had been successfully grafted for the more speedy repair of an ulcer due to phlegmonous erysipelas. The drawing was made six weeks after the first grafting. (T. Godart.)

See *Female Surgical Register*, vol. i. (1885), No. 1878.

534c. Drawing of the Right Thigh of a man who had extensive and long-standing ulceration. The ulceration was not due to syphilis, but no cause could be assigned for its occurrence. (T. Godart.)

See *Male Surgical Register*, vol. v. (1886), No. 3400*.

535e. A large Ulcer occurring on the dorsum of the foot of a girl whose leg had long been useless on account of chronic disease of the knee-joint. (T. Godart.)

See *Female Surgical Register*, vol. iii. (1886), No. 225.

553a. A large Warty Growth springing from the margins of the anus in a man. (T. Godart.)

TERATOLOGICAL CATALOGUE.

SERIES I.—ABNORMAL CONDITIONS OF THE AXIS.

CLASS II.—DUPLICITY.

SUB-CLASS II.—HOMOLOGOUS UNION.

(*a.*) *Prozygosis.*

3410a. Female Twin Fœtuses united by their faces along the median line, and by their thoracic laminæ above the umbilicus. They constitute the variety of homologous union known as Iniops.

The faces are fused in such a manner that two lateral faces are formed out of four halves. Of these faces, one differs from that of an ordinary infant only in its greater

breadth, whilst the other is a mere rudiment. The less-developed face has a single median eye, above which is a kind of proboscis measuring two-thirds of an inch in length. Beneath the eye is a papilla of skin, with a small central aperture, through which a probe can be passed into the mouth of the opposite face. Beneath this papilla and aperture are two ears, fused by their lobes, but otherwise distinct. The other two ears are separate, and bear their normal relation to the well-formed face.

The brain, like the faces, was fused, but it was not in a condition to admit of a detailed examination.

The skulls are fused in the basi-sphenoidal region, so that the anterior cerebral fossæ are absent.

In the thorax are two pairs of lungs situated laterally, one pair in each thoracic cavity. They appear to be normal, and have the ordinary blood supply.

There are two hearts, one situated in each thoracic cavity, each being enclosed in its own pericardium.

The heart belonging to the left fœtus (the monster being looked at from the side of its more developed face) is imperfect. It consists of a single large left ventricle with a complete auricle, and a small ill-developed right ventricle with a minute right auricle. The larger ventricle gives off the pulmonary artery and the aorta. From the aorta three large branches arise, the first at the junction of the ascending with the transverse portion. This branch is the right subclavian for the right fœtus. The second branch comes off from the transverse portion of the arch. It soon divides into the two common carotids for the right and left sides of this aspect of the monster; whilst the third branch is given off immediately beyond the ductus arteriosus. It forms the left subclavian artery of the left fœtus.

The heart lying in the thorax, corresponding with the less-developed face chiefly supplies the right fœtus. It is normal, consisting of two ventricles and two auricles, with the aorta and pulmonary artery arising from it as usual. The arch of the aorta gives off two branches, of which the first almost immediately divides into a right and left common carotid, whilst the second, given off immediately beyond the point where the recurrent laryngeal nerve winds round the aorta, is the left subclavian artery of the left fœtus.

In the abdomen the two kidneys are partially fused on either side.

The upper portion of the small intestines are united as far as a point twelve inches above the ileo-cæcal valve. This point of union is situated immediately above the persistent omphalo-mesaraic duct.

The stomach is single.

The spleens and adrenals are double and not fused.

Presented by Alfred Robinson, Esq.

CLASS V.—ARREST OF DEVELOPMENT.

SUB-CLASS V.—DEFECTIVE CLOSURE OF THE AXIAL CANAL OF THE CEREBRO-SPINAL SYSTEM.

(*c.*) *Spina Bifida.*

3480. The Lumbar and Sacral Spine of an infant with a spina bifida. The centre of the membranous portion of the sac-wall has been destroyed by sloughing, the result of treatment. The lower portion of the spinal cord projects backwards from the vertebral canal and presents with some of the nerve roots within the opened sac. With the exception of the failure in the arches, the vertebræ appear in other respects to be normal.

See *Sitwell Ward Book*, vol. v. p. 147; and Report of the Committee on spina bifida in the *Clinical Society's Transactions*, vol. xviii. Case No. 19.

3483. The parts concerned in a Sacro-coccygeal Meningocele after loss of the sac-wall. From a child about six years old. The extremity of the cord and the cauda equina, occupying the lower portion of the neural canal, are completely exposed: the conus medullaris terminates in a filament, which presents a gangliform enlargement two millimetres in its shorter diameter near its lower end. The lowest nerve-roots are furnished with "ganglia aberrantia." The aperture is bounded by an irregular ulcerated margin of skin.

See the Report of the Committee on spina bifida. *Transactions of the Clinical Society*, vol. xviii. No. 6.

3485. A specimen of Spina Bifida in the lumbo-sacral region with considerable distortion of the pelvis and lumbar spine. A process of bone extends from before backwards completely across the vertebral canal immediately above the deficiency. This process of bone perforates the spinal cord, which appears to reunite below. The cord terminates in a flattened expansion which rests upon a mass of fat on the inner aspect of the dura mater. The nerves come off irregularly from the front of the expansion. Above its perforation the cord presents a greatly dilated central canal. A thin smooth membrane lines the dura mater forming the sac. The sacrum and coccyx are exceedingly irregular in form; their whole direction is altered, the upper part of the sacrum lying on the left side of the middle line, the coccyx and lower part of the sacrum pointing towards the right side. The right iliac bone is attached to the sacro-lumbar vertebræ by fibrous tissue.

See *Lucas Ward Book*, vol. iv. p. 70, for clinical details. The case is referred to in the Report of the Committee on spina bifida in the *Clinical Society's Transactions*, vol. xviii. No. 23.

SERIES II.

ABNORMAL CONDITIONS OF THE LIMBS.

CLASS I.—VARIATION.

(*b.*) *In the Digits.*

3499b. Two Symmetrical Supernumerary Little Fingers removed from a child five days old. Each finger was attached by a slender pedicle, and each is provided with a rudimentary finger-nail. Both fingers are malformed. There was no history of any other member of the family having an extra digit.

Presented by A. M. Gledden, Esq.

SERIES III.

ABNORMAL CONDITIONS OF THE OSSEOUS AND MUSCULAR SYSTEMS.

CLASS I.—VARIATION.

3518b. The Hyoid and portions of the Temporal Bones from a human skull, showing the almost complete ossification of the stylo-hyoid ligaments on both sides. The ossified ligaments are divided into segments, the segments being united by joints enclosed in synovial membranes.

Presented by S. T. Pruen, Esq., M.D.

3522b. An adult Skull, to which the first cervical vertebra is inseparably united. The union is bony at every part, except at a small space in the median line anteriorly, and at the apertures through which passed the vertebral arteries and suboccipital nerves. The bone uniting them is so healthy and smoothly continuous with the adjacent surfaces that it may be assumed the union was accomplished before birth. The sutures between the pre-maxillary and superior maxillary bones are not closed.

A. 152.

3524b. A Congenital Tumour removed from the back of a boy aged 9 years. It was situated over the spine of the seventh dorsal vertebra, and was firmly connected with it and with the spines of the two neighbouring vertebræ. It measures two inches in length, and is divided into lobes corresponding with the vertebræ to which it was attached. It is apparently mesoblastic in origin, for it contains cartilage, gelatinous tissue, fibrous tissue, and muscle.

A section is preserved in Series lv. No. 158a.
See *Male Surgical Register*, vol. iii. (1886), No. 952.

SERIES IV.

ABNORMAL CONDITIONS OF THE VASCULAR SYSTEM.

(I.) Of the Blood-Vessels.

CLASS I.—VARIATION.

3528a. The Arch of the Aorta giving off an extra branch, viz., the left vertebral. The vessels arise in the following order:—(1.) The innominate artery, dividing as usual into the right subclavian and right

common carotid arteries; (2.) The left common carotid; (3.) The left vertebral; and (4.) The left subclavian artery.

From the dissecting-rooms.

Presented by H. E. Knight, Esq.

(2.) Of the Heart.

CLASS I.—VARIATION.

3592a. The Heart of a child. It presents an abnormal fibrous band measuring $1\frac{3}{8}$ inches in length. The band commences at the superior vena cava, and passing behind the left auricle, terminates in front of the left auricular appendix. In the vena cava inferior and in the left auricle are depressions corresponding to the external attachments of the band.

See also *Transactions of the Pathological Society*, vol. xxxvii. p. 147.

Presented by C. B. Lockwood, Esq.

SERIES VI.

ABNORMAL CONDITIONS OF THE DIGESTIVE ORGANS.

CLASS V.—ARREST OF DEVELOPMENT.

(*b.*) *Imperforate Anus.*

3640a. The Rectum and Urino-genital Organs of a male infant. The anus is imperforate. The rectum opens by a small aperture, through which a black bristle has been passed, into the prostatic portion of the urethra immediately upon the left side of the verumontanum. The situation of the anus is marked by a small papilla in front of the upper portion of the bristle.

From a child aged 23 days. Lumbar colotomy was performed three weeks before death.

Presented by L. Drage, Esq.

3640b. The Rectum and Urino-genital Organs from a newly-born female child. The anus is imperforate; the rectum opens by a large aperture into the posterior wall of the vagina. Through this opening a glass rod has been passed. The other organs are natural.

The two preceding specimens were shown before the Pathological Society during the Session 1886–87.

ANATOMICAL AND PHYSIOLOGICAL CATALOGUE.

SERIES II.

THE BLOOD.

10a. A specimen of Frog's Blood mounted for microscopical examination, to show the characteristic features of the blood of the Ichthyopsida.

10b. A microscopical preparation of the oval nucleated Blood Corpuscles of a reptile.

SERIES VIII.

THE OSSEOUS SYSTEM.

(A.) HUMAN OSTEOLOGY.

295a. The First Rib of the Left Side. The costal cartilage has become ossified, and at its point of union with the spinal extremity of the rib the bone has become heaped up in such a manner as to suggest that there had been a fracture at this point. No such fracture, however, had taken place.

295b. Section of a Rib in a condition similar to the preceding. The remains of the cartilage are seen to be enclosed in a calcareous coating.

The two preceding specimens were presented by C. B. Lockwood, Esq.

(B.) OSTEOLOGY OF ANIMALS.

I.—SKELETONS.—GROUP I. ICHTHYOPSIDA.—CLASS I. PISCES.

323a. Rock-Fish (Chætodon). C. 64.

323b. Skin and Dermal Bones of a Porcupine Fish (Diodon punctatus). C. 13.

Presented by Lucas Hooper, Esq.

326a. Sun-Fish (Ostracion bicaudalis). C. 18.

Presented by Mr. Delamotte and Dr. Furnell.

GROUP II. SAUROPSIDA.—CLASS I. REPTILIA.

344a. Chameleon (Chamæleon Vulgaris). C. 57.

350a. Skeleton of a West Indian Crocodile (Crocodilus acutus). 28, 294.

II.—SKULLS.—GROUP III. MAMMALIA.

386a. The Skull of an adult Hippopotamus.

The characteristic features are : (1.) The almost complete and tubular orbits. (2.) The union for a considerable extent of the nasals and premaxillæ. (3.) The long bony palate. (4.) The massive mandible with its angle produced backwards.

Presented by F. A. Arnold, Esq.

III.—LIMBS AND LIMB-ARCHES.—GROUP III. MAMMALIA.

615a. The Right Humerus of a Rhinoceros, found in a cave in North Wales.

Presented by Mrs. G. C. Haseler per H. E. Whitehead, Esq.

SERIES XX.

THE ARTERIES AND VEINS.

864a. A Right Lower Extremity with all its principal arteries and veins injected. **18, 61.**

SERIES XXVI.

THE EYE.

1020a. A collection of Histological Preparations of the Lacrymal and Harderian glands of various animals. (In the Histological Cabinet on the ground floor of the Museum.)

Presented by Henry Power, Esq.

SERIES XXXII.

SPECIMENS ILLUSTRATING THE DEVELOPMENT OF THE OVUM.

1307a. An Umbilical Cord of unusual length, but of normal structure. Before it was put into spirit it measured sixty-three inches from the umbilicus to its insertion into the placenta.

Presented by W. Woolcombe, Esq.

1308a. The Egg-Case or Nidamental Capsule of a Shark.

1311a. The Egg of an Ostrich. C. 50.

1317a. Portion of the Amnion of a Fœtal Horse, dried after the injection of its blood-vessels with mercury. 35, 35.

1387a. A Preparation to show the parts exposed by Lisfranc's operation of removing the foot at the tarso-metatarsal articulation. Glass rods have been placed in the blood-vessels.

1387b. A Preparation to show the parts exposed by Chopart's amputation of the foot at the mid-tarsal joint. Glass rods are placed in the blood-vessels.

1387c. A Preparation to show the parts exposed by Pirogoff's amputation of the foot through the calcaneum. Glass rods are placed in the blood-vessels.

1387d. A Preparation to show the parts exposed by Syme's amputation of the foot at the ankle.

1387e. A Preparation to show the parts exposed in amputating through the leg by Teale's method of rectangular flaps.

The five preceding specimens were prepared and presented by James Berry, Esq.

SERIES XXXV.

MISCELLANEA.

1428b. Horn of a Rhinoceros. C. 28.

Presented by J. Howard, Esq.

1428c. Nest of the Manyar Weaver-bird.—Ploceus manyar (India).

SERIES XXXVI.

CATALOGUE OF THE INVERTEBRATA.

1433a. A specimen of Turkey Sponge, to show the exhalent and inhalent apertures.

From Smyrna.

Presented by W. J. Wordsworth, Esq.

1476a. A Microscopical Preparation of a fertilised Proglottis of Tænia Solium, to show the great size of the ovary.

1483b. A Preparation to show Echinococci, obtained from a hydatid cyst growing in a human liver.

1483c. A Preparation showing Echinococci, obtained from a hyatid cyst occurring in the liver of a pig. The crowns of hooklets are well seen.

1494a. An unstained Preparation of the Human Biceps, showing the trichina spiralis encapsuled, and lying between the muscle fibres.

1535b. A Microscopical Preparation of Acarus scabiei, the itch insect.

1540a. Locusta Migratorius, a series of preparations to show the various changes undergone during the development of an ametabolic insect.

Collected and presented by S. C. K. Moberley, Esq.

1541a. A specimen of the Locust Saga serrata.

1541b. A specimen of an adult female Locusta caudata or viridissima.

1541c. Thamnotrizon apterus.

1541d. Two specimens of the Decticus vittatus.

1541e. Two specimens of Stetheophyma variegata.

1541f. The Œdipoda cœruleus.

The preceding specimens were presented by S. C. K. Moberley, Esq., who obtained them in the neighbourhood of Taganrog, South Russia.

1542a. Male and female specimens of the Gryllus campestris.

1542b. Gryllus melas.

Presented by S. C. K. Moberley, Esq.

1545a. A specimen of Pediculus pubis or Crab Louse, obtained from the eyelash.

1546a. Specimens of Pediculus vestimenti.

1546b. Specimen of the Common Bug (*Cimex lectularius*), prepared for microscopical examination.

1546c. Head of the Common Bug (*Cimex lectularius*).

1546d. A specimen of an undetermined species of Water-Bug—Nitia (?).

Presented by S. C. K. Moberley, Esq., who obtained it in the neighbourhood of Taganrog, South Russia.

1547a. Specimen of Pulex irritans, the common Bed-Flea, prepared for microscopic examination.

1553a. Two specimens of the Triscolia hæmorrhoidalis.

Presented by S. C. K. Moberley, Esq., who captured them in the neighbourhood of Taganrog, South Russia.

1562a. A male and female specimen of Anisoplia crucifera in the act of coition.

1562b. A specimen of Cetonia aurata, the Golden Beetle.

1562c. A specimen of a male and female Oryctes nasicornis. The male has a large horn, which in the female is rudimentary.

1562d. A specimen of the female Amophylla campestris.

1562e. A specimen of an undetermined species of Rhisotrogus.

1562f. Two incomplete specimens of Hydrophilus piceus.

1562g. Two incomplete specimens of the Water-Beetle, Dytiscus marginalis.

1562h. A specimen of Chrysomela limbata.

The eight preceding specimens were presented by S. C. K. Moberley, Esq., who obtained them in the neighbourhood of Taganrog, South Russia.

Muricidæ.

1597a. Three shells of Murex brandaris. 196.

Helicidæ.

1628a. Specimens of several common forms of Helix. 230.

SERIES XXXVII.

CLASS I.

CASTS OF NORMAL STRUCTURES.

1a. Model of the Human Brain, Cerebellum, and Medulla, constructed to show the gross anatomy of the organs.

1b. Model of the Human Eye on an enlarged scale, to show the microscopic as well as the macroscopic characters.

1c. Greatly enlarged Model of the Human Ear, to show the auditory mechanism.

1d. Gigantic Model of the Tongue and Larynx, adapted to exhibit the various anatomical details.

CLASS II.

CASTS OF MALFORMATIONS.

103. Cast of the Legs and Feet of a Boy who had a congenital malformation of the right foot and toes with talipes varus. The right leg was considerably shorter than the left, and the foot had a large corn on the outer side. The great-toe was hammer-shaped, and there was marked contraction of the tendo-achillis and plantar fascia. The left foot was in a condition of valgus.

Male Surgical Register, vol. iii. (1886), No. 3605*.

104. Cast of the Right Foot and Leg from a case of congenital fracture of the right tibia in the lower third without union. The lower extremity of the upper fragment projected forwards and inwards.

See *Female Surgical Register*, vol. v. (1886), No. 2310*.

105. A Cast of the Feet of a New-Born Child, showing the position of the feet in congenital talipes valgus and varus.

From the Clinic of Professor Von Volckmann, Halle. Cf. No. 3480a.

Presented by W. G. Spencer, Esq., M.B.

SERIES XXXVIII.

DRAWINGS OF CONGENITAL MALFORMATIONS.

32. Drawing of an Old Man with supernumerary nipples. The brachial arteries were unusually tortuous and distinct.

SERIES XXXIX.

CATALOGUE OF MIDWIFERY AND OTHER INSTRUMENTS.

61. MAINS, an instrument introduced by Palfin into the art of obstetrics. It is considered to have led to the invention of forceps.

They formerly belonged to Dr. Mayo of Winchester.

Presented by Mr. T. Godart.

SERIES XXXIXA.

(1.) A Case of Dissecting Instruments formerly belonging to John Abernethy.

(2.) A Case of Small Trephining Instruments formerly belonging to John Abernethy.

(3.) A Case containing six Surgical Needles for use in the ligature of nævi, formerly belonging to John Abernethy and afterwards to Thomas Wormald. Two of the needles are of silver with detachable steel points.

(4.) A pair of Obsolete Artery Forceps with a sliding catch, formerly belonging to John Abernethy.

Presented by A. Willett, Esq.

(5) A Clinical Thermometer used in England during the latter half of the eighteenth century.

Presented by Robert Martin, Esq., M.D.

DESCRIPTIONS

OF THE

ILLUSTRATIONS OF CERTAIN DISEASES OF THE TONGUE.

PRESENTED BY

H. T. BUTLIN, Esq.

INDEX TO THE MORE SCATTERED ILLUSTRATIONS OF CERTAIN DISEASES.

Chronic Superficial Glossitis and its effects—

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(And some of the illustrations of chronic superficial glossitis.)

Cancer	vii. 2, 3; xv. 2, 3, 4; xvi. 1, 2, 3, 4.
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PLATE I.

1. Drawing representing an eruption at the tip of the tongue of an intemperate man. The eruption was *vesicular* and acute.

Out-patient Department, June 1884.

2. Drawing of the tongue of a boy about 10 years old, showing a group of *vesicles* near the tip. These vesicles were probably the precursors of aphthous ulcers, from which several of the children of the family were or had been suffering. The boy was not seen again. The tongue was coated and the breath was foul.

Consulting Room, June 1886.

3. Drawing of the *indented* tongue of a woman 60 years of age. The precise cause of the disfigurement could not with certainty be ascertained, but it was partly due to the teeth, partly perhaps to syphilis.

Out-patient Department, December 1883. (M. Colson.)

4. Drawing of a "raw" and *excoriated* tongue in a young man 17 years of age. The fungiform papillæ were large and prominent, while the filiform papillæ of the raw area were less prominent than usual. The cause of the condition was not clear. The patient did not smoke or drink, and there was no history of dyspepsia; possibly it might have been due to "sucking the tongue."

Out-patient Department, March 1883. (J. Cooksey.)

PLATE II.

1. Drawing of a "raw" and *excoriated* tongue. The condition appeared to be in part due to dyspepsia. The patient was a boy. There was a sore place at the corner of the mouth, which looked as if it might have been due to secondary syphilis, but there was no other sign or history of syphilis.

Out-patient Department, June 1884.

2. Drawing of the *fissured* tongue of a syphilitic man (tertiary syphilis).

Out-patient Department, January 1885. (H. Fox.)

3. Drawing of the tongue of a man 34 years old, with *fissures* and *furrows* of tertiary syphilis.

Out-patient Department, December 1883. (A. Elliott.)

4. Drawing showing deep *fissures* and disfigurement produced by tertiary syphilis in a woman.

Out-patient Department, January 1884.

PLATE III.

1. Drawing showing *aphthous* ulceration of four days' duration of the tongue of a boy 5 years old. Said to have been produced by sucking pennies.

Out-patient Department, February 1885. (Bl. Sharp.)

2. Drawing of a *chronic* ulcer of the dorsum of the tongue of a man. All other means having failed to cure, it was finally cut out by elliptical incisions, two embracing each arm of the ulcer.

Out-patient Department, October 1884. (J. Cooper.)

3. Drawing of an extensive *chronic* ulcer of the tongue of a man. He had been a great smoker, but believed he had never suffered from syphilis.

Out-patient Department, December 1885. (A. Simmons.)

4. Drawing showing two typical *dyspeptic* ulcers of the tip of the tongue. Small central slough, sharp-cut edges and a bright red areola.

PLATE IV.

1. Drawing of the tongue of an old man, showing an indolent *traumatic* ulcer on the border, due to the rubbing of a tooth. The base of the sore was indurated, so that it was feared it might be cancerous, but it disappeared within a few days of the removal of the tooth.

Darker Ward, under the care of Mr. Langton, 1884.

2. Drawing of an *inflamed traumatic* ulcer on the border of the tongue of a man 24 years old. It was due to the rubbing of a rough and carious tooth.

Out-patient Department, February 1884. (G. Galligan.)

3. Drawing of a *tuberculous* ulcer of the tip of the tongue. The patient was a woman suffering from general tuberculosis.

President Ward, July 1884. (E. Mengham.)

4. Drawing showing the fore-part of the tongue of a young woman suffering from *lupus*. Almost the whole of the tip of the tongue had been destroyed by the disease, which had commenced on the face and slowly spread to the lips and tongue. She said she had been constantly in the habit of licking the sore lips with the tip of the tongue.

President Ward, December 1884. (H. Pigott.)

PLATE V.

1. The tongue of a man 28 years old, showing *ulcerated mucous patches* due to secondary syphilis. They had been rubbed by the

teeth, were ulcerated, fissured, and inflamed. The yellowish trefoil patch towards the dorsum shows how the disease spread during the course of a week, while he was under observation.

Out-patient Department, November 1882.

2. Drawing showing a *gummatous* ulcer of the tongue of a man 25 years old. There was a central slough and a raised undermined border.

Consulting-room. (W. Portch.)

3. Drawing showing a great central chasm due to *gummatous ulceration* of the tongue in a man 39 years of age. He had only known of its existence a few days, and it gave him but little trouble.

Out-patient Department, July 1883. (W. Wallis.)

4. Drawing showing *ulceration* of the border of the tongue of a woman, due to tertiary syphilis. It was very painful, but not at all inflamed.

Out-patient Department, November 1885. (C. Munday.)

PLATE VI.

1. Drawing of *leucoma* on the tongue of a woman 34 years of age. The diseased area was very soft and fluffy towards the middle of the tongue. It had commenced 19 years previously after a burn of the surface of the tongue, and had made more rapid progress after the application of caustic.

(Mrs. P., seen with Dr. Hall.)

2. Drawing of *ichthyosis* of the tongue of a man. The diseased area of the tongue was very hard, with hard hypertrophied papillæ.

(From a man under the care of Dr. Sharkey, 1886.)

3. Drawing of the tongue of a man 41 years old, showing a large patch of *leucoma* in the centre of the fore part of the dorsum. He had been a smoker and drinker.

(From a man under the care of Dr. Hall.)

4. Drawing of the tongue of a man 34 years old, the seat of extensive *leucoma.* The rawness of the borders and the three red areas in the centre were due to an attack of acute inflammation.

Out-patient Department, March 1882. (D. Piper.)

PLATE VII.

1. Drawing of a *warty* growth on the dorsum of a tongue which had been the seat of *leucoma* for an unknown period of time. The leucoma was thin and translucent.

Henry Ward, June 1884. (John Bowles.)

2. Drawing showing a *warty epithelioma* (squamous-celled carcinoma) of the tongue of a man advanced in life. The surface of the tongue was the seat of *leucoma* of some years' duration. The carcinoma commenced as a wart.

Henry Ward, July 1884. (John Stalker.)

3. Drawing showing a small mass of *squamous-celled carcinoma* (epithelioma) on the dorsum of the tongue of a man aged 45. The surface of the tongue was the seat of *chronic superficial glossitis*, with patches of leucoma.

Throat Department, November 1884. (Peter Douglas.)

4. Drawing of the tongue of a boy aged 8 years, showing *wandering rash*. He had been subject to it for several years, but there were not any subjective symptoms of the disease.

(Master A. M., February 12, 1885.)

PLATE VIII.

1. Drawing of the tongue of a young man suffering from secondary syphilis. There are three *mucous patches*, and a smooth area on the left border, from which the white covering had been removed. The absence of surrounding inflammation is noteworthy.

Out-patient Department, May 1883.

2. Tongue of a female child 2 years old, showing *mucous patches* on the dorsum and at the corners of the mouth. The child was the subject of inherited syphilis.

Out-patient Department, Febuary 1884. (No. 147.)

3. Tongue of a man aged 28, suffering from secondary syphilis. On the right border is a *mucous patch*, with a fissure in the centre. It had been irritated by the teeth. Twelve months had elapsed since the primary sore.

Out-patient Department, February 1882.

4. Tongue of a man aged 19 years, showing *condylomata* on the under aspect of the tip. The patient was suffering from secondary syphilis. The prominence and perfection of form of the growths were probably due to the fact of their position on the under aspect of the tongue, where they were sheltered from rubbing and the passage of food.

Out-patient Department, November 1881.

PLATE IX.

1. Drawing of a *tertiary syphilitic plaque* on the dorsum of the tongue of a man aged 56. The surface of the tongue was the seat of leucoma and chronic superficial glossitis, with acute ulceration.

Out-patient Department, February 1882. (J. Clithero.)

2. Drawing of an oval plaque on the tongue of a man suffering from *tertiary syphilis.* On the right border are two *gummatous* swellings. The whole of the disease appeared during the period in which he was treated in the Out-patient Department; it disappeared under the administration of large doses of iodide of potassium.

Out-patient Department, January 1882. (R. Smith, æt. 30.)

3. Tongue of a man suffering from anæsthetic *leprosy.* The drawing shows a number of nodules on the dorsum, borders, and tip, some of which were as large as peas. They were very firm, smooth, and for the most part rounded on the surface, but some of them were flattened. They were not ulcerated. They were not anæsthetic; indeed, some of them were decidedly tender.

The patient was an Englishman, who had lived for some years in India. He was the victim of typical anæsthetic leprosy, affecting the face, palate, larynx, &c., &c. The duration of the disease was about two years, but he did not know how long his tongue had been affected.

Patient under the care of Dr. Andrew in Mark Ward, August 1885.

4. Drawing showing a raised, slightly indurated plaque on the border of the tongue of a man 28 years old. Probably *tuberculous.* It was slightly broken down in the centre, and exhibited two or three yellow points on its surface, such as are thought to be pathognomonic of tubercle of the tongue. It had existed a year, and there were signs of general tuberculosis.

Out-patient Department, March 1886.
(Charles James. He was lost sight of after the first visit.)

PLATE X.

1. Drawing of a tongue showing two *smooth crescentic areas* on the fore part of the dorsum. The patient, a man 22 years old, was only made aware of their existence by discovering them by chance in the looking-glass. No probable cause could be assigned for their origin.

Out-patient Department. (Alfred Hardy.)

2. Drawing of a perfectly *smooth tongue* in a delicate anæmic woman about 30 years of age. The tongue was lissome, free from fur, and only excoriated here and there on the borders.

Lawrence Ward, March 1884. (Mrs. Evans.)

3. Drawing of the tongue in a case of progressive muscular atrophy, showing *atrophy* of the right half of the organ. The atrophied half is shortened, wrinkled, and thickly furred.

W. Henvill, under the care of Dr. Gee, in Luke Ward, September 1885.

4. Drawing of a *fissured* and *atrophied* tongue produced by tertiary syphilis occurring in a woman aged 56.

Out-patient Department, July 1885. (C. Watts.)

PLATE XI.

1. Drawing showing *hypertrophy* of the left half of the tongue of a man suffering from cancer at the back of the organ. The hypertrophy appeared to be due to inflammation and to the pressure on the vessels exercised by the cancer.

Henry Ward, September 1885. (Henry Patterson.)

2. Drawing showing a small oblong translucent *cyst* on the under aspect of the tongue of a girl aged 6 years. The duration of the disease was uncertain. It was treated by a seton, when clear, thin fluid escaped.

Out-patient Department, April 1886. (J. Harvey.)

3. Drawing showing a *ranula* under the tongue of a young man.

Out-patient Department, June 1886.

4. Drawing showing a tiny *cyst* under the tongue of an infant 2 months old. It contained thick creamy fluid within a thick cyst-wall.

Out-patient Department, March 1886.

PLATE XII.

1 and 2. Two drawings showing the swelling produced by the presence of a *dermoid cyst* on the left side. The mucous membrane was thrust up by the tumour, but otherwise little altered in character.

Henry Ward, March 1886.

3. Drawing showing a suppurating *dermoid cyst* under the tongue of a girl 5 years old. A little pus is escaping from a tiny puncture which was made on the left side. The tumour had not been previously treated, and the pus was laudable pus, quite inoffensive. There was not any swelling under the floor of the mouth. The absence of the characteristic symptoms of dermoid cyst led to the belief that the disease was a chronic abscess, although there was a history of long duration, perhaps from birth. Other means having failed to cure the abscess, it was ultimately dissected out, when its true nature was discovered. The account of the sac is given by Mr. S. Paget in the Transactions of the Pathological Society, 1886.

Out-patient Department and Lawrence Ward, July 1885. (M. A. Jepcoat.)

PLATE XIII.

1. The tongue of a man 25 years old, showing a small tumour on the right border. It is very hard, slightly constricted at the base,

smooth, painless, but troublesome because it was occasionally bitten. It proved to be a *fibroma*. The tumour had existed for five years.

Out-patient Department, February 1886.

2. Drawing showing a compound *papillary* growth on the border of the tongue of a woman between 50 and 60 years of age. It had existed for six years.

Out-patient Department, 1885.

3. Drawing of the tongue of a boy 7 years of age, showing a papillary and vascular swelling of the fore part of the left half. The disease extended round the border to the under aspect of the tongue. It had been first noticed when he was a year old. It appeared to be an altered *nævus*.

Throat Department, July 1883.

4. Tongue of a woman 20 years of age, showing warty masses. One of them was said to be congenital, the others of between one and two years' duration. They were cut out, when they were found to be altered *nævi*.

President Ward, August 1883.
Patient transferred to Mr. Butlin by Mr. Marsh during his holiday.

PLATE XIV.

1. Drawing of the tongue of an old woman, showing a *nævus* at the tip. It had existed from birth, but had never grown out of proportion to the growth of the tongue, or caused her any trouble.

Out-patient Department, March 1886.

2. Tongue of a man 68 years old, showing a large soft *nævus*. It had existed from birth, but had never occasioned him the least inconvenience.

Patient under the care of Dr. De Havilland Hall, December 1885.

3. Drawing of the tongue of a girl 3 years old, with a growing *nævus* of the right border.

Lawrence Ward, July 1886. (Edith Histed.)

4. The tongue of a woman aged 24 years. On the left half was a warty tumour, with black and red papillæ. It was removed with the galvano-cautery, and proved to be a degenerated *nævus*. The patient believed that it had only existed a few weeks, and said that it was rapidly increasing in size.

Lawrence Ward, June 1885.

PLATE XV.

1. Drawing showing a large rounded tumour in the left half of the tongue of a man 44 years of age. The tumour was so soft and smooth on the upper surface that it was thought to fluctuate. The

tongue could not be protruded on account of the implication of the floor of the mouth. The duration of the disease was said to be only about two months at the time of the removal of the left half of the tongue. It proved to be a round-celled or lympho-*sarcoma.*

Rahere Ward, November 1886.

2. Drawing showing a small and recent squamous-celled *carcinoma* (epithelioma) of the tongue of an old man. The surface of the tongue had upon it several patches of leucoma and small warty growths.

Henry Ward, October 1885. (Daniel Walker.)

3. Tongue of a man aged 40 years, with an ulcerated squamous-celled *carcinoma* (epithelioma) of the border. The surface of the tongue had been the seat of leucoma for years, and there were several curious little bright warty growths scattered on the dorsum.

Henry Ward, March 1884. (Thomas Slater.)

4. Drawing of the tongue of a man with a raised mass of squamous-celled *carcinoma* (epithelioma) of the border. The surface of the tongue was the seat of chronic superficial glossitis of old standing.

From a patient (Henry Orange) under the care of Mr. T. Smith, Henry Ward, July 1885.

PLATE XVI.

1. Drawing showing a fungating squamous-celled *carcinoma* (epithelioma) of the fore part of the tongue of a man.

Patient (John Sullivan) under the care of Mr. Willett in Pitcairn Ward, October 1884.

2. Drawing of the tongue of a man, showing a fungating squamous-celled *carcinoma* (epithelioma). The central part had sloughed.

A patient (Thomas Porter) under the care of Mr. T. Smith, Henry Ward, December 1883.

3. Drawing of the tongue of a man 52 years old, showing a fissured squamous-celled *carcinoma* (epithelioma). The tongue could not be protruded because it was fixed to the floor of the mouth.

From a patient (William Brown) under the care of Mr. T. Smith, Henry Ward, January 1884.

4. Drawing of the tongue of a man with an ulcerated squamous-celled *carcinoma* (epithelioma) of the right half. There was a central slough. The dorsum of the tongue was the seat of superficial glossitis, and, near the carcinoma, of an area of typical ichthyosis.

Out-patient Department, November 1885. (G. Smith.)

EXAMINATIONS, 1884-85.

Lawrence Scholarship and Gold Medal—
W. G. Spencer.

Brackenbury Medical Scholarship—
W. J. Gow.

Brackenbury Surgical Scholarship—
L. M. Gabriel.

Senior Scholarship in Anatomy, Physiology, and Chemistry—
J. Wilkie.

Open Scholarships in Science—
B. Pierce.
Æq. { R. Pickard. / E. N. Reichardt.

Preliminary Scientific Exhibition—
R. G. Elliott.

Jeaffreson Exhibition—
Æq. { H. G. Cook. / W. A. Murray.

Kirkes Gold Medal—
W. J. Gow.

Prox. accessit—
W. G. Spencer.

Bentley Prize (Surgical)—
A. M. Gledden.

Hichens Prize—
E. H. Hankin.

Wix Prize—
Magnus Olaf Manson.

Harvey Prize—

1. E. H. Hankin.
2. W. G. Williams.
3. G. Heaton.
4. J. G. E. Colby.
5. { S. Blackman. / T. J. Bokenham.
7. R. Bird.

PRACTICAL ANATOMY.

Senior.

Foster Prize—C. S. Edwards.
2. A. Lucas.
3. J. Rust.
4. { W. N. Evans. / T. J. Lissaman.
6. W. B. Lane.
7. { F. M. Brown. / H. Symonds.
9. H. Huxley.
10. { G. Heaton. / J. E. Spencer.

Junior.

Treasurer's Prize—C. H. Roberts.
2. H. G. Cook.
3. D. T. Belding.
4. { T. J. P. Jenkins. / W. G. Willoughby.
6. Hansby Maund.
7. J. G. Ogle.
8. H. A. Sylvester.
9. W. F. Cholmeley.
10. C. E. R. Rendle.
11. { C. E. Hutt. / J. J. Macgregor.

Junior Scholarships—
1. B. Pierce.
2. C. H. Roberts.
3. R. Pickard.

EXAMINATIONS, 1885-86.

Lawrence Scholarship and Gold Medal—
H. Davidson.

Brackenbury Medical Scholarship—
H. J. Tylden.

Brackenbury Surgical Scholarship—
A. Lyndon.

Senior Scholarship in Anatomy, Physiology, and Chemistry—
G. Heaton.

Open Scholarships in Science—
Æq. { H. R. Jones. / J. Kerr. }
C. R. Stevens.

Preliminary Scientific Exhibition—
E. J. P. Olive.

Jeaffreson Exhibition—
J. Williamson.

Kirkes Gold Medal—
W. N. Hamer.

Bentley Prize (Surgical)—
G. E. Deacon.

Hichens Prize—
Æq. { F. S. Locke. / F. S. J. Lulham. }

Wix Prize—
W. Tunnicliffe.

Harvey Prize—

1. B. Pierce (prize).
2. C. H. Roberts.
3. J. G. Ogle.
4. J. Bell.
5. { T. Hayward. / R. Pickard. }
7. J. Knight.

PRACTICAL ANATOMY.

Senior.

Foster Prize—B. Pierce.
2. C. H. Roberts.
3. G. H. D. Robinson.
4. D. T. Belding.
5. W. G. Willoughby.
6. H. E. Knight.
7. C. E. Hutt.
8. W. F. Cholmeley.

Junior.

Treasurer's Prize—G. L. Rolleston.
2. R. C. Bailey.
3. H. M. Bowman.
4. C. R. Stevens.
5. L. D. Lowsley.
6. W. K. Hughes.
7. G. F. Murrell.
8. W. M'Adam Eccles.
9. J. M. Rees.
10. R. A. Walter.
11. L. M. Jones.

Junior Scholarships—
1. G. L. Rolleston.
2. W. M. A. Eccles.
3. W. F. Oakshott.

ST. BARTHOLOMEW'S HOSPITAL & COLLEGE.

THE MEDICAL AND SURGICAL STAFF.

Consulting Physicians—Sir G. Burrows, Bart., D.C.L., F.R.S., Dr. Martin.

Consulting Surgeons — Sir J. Paget, Bart., D.C.L., LL.D., F.R.S., Mr. Luther Holden.

Physicians—Dr. Andrew, Dr. Church, Dr. Gee, Sir Dyce Duckworth.

Surgeons—Mr. Savory, F.R.S., Mr. Thomas Smith, Mr. Willett, Mr. Langton, Mr. Morrant Baker.

Assistant-Physicians—Dr. Hensley, Dr. Brunton, F.R.S., Dr. Wickham Legg, Dr. Norman Moore.

Assistant-Surgeons—Mr. Marsh, Mr. Butlin, Mr. Walsham, Mr. Cripps, Mr. Bruce Clarke.

Physician-Accoucheur—Dr. J. Matthews Duncan, F.R.S.

Assistant-Physician-Accoucheur—Dr. Godson.

Ophthalmic Surgeons—Mr. Power, Mr. Vernon.

Dental Surgeons—Mr. Ewbank, Mr. Paterson.

Assistant-Dental Surgeons—Mr. Ackery, Mr. Mackrell.

Aural Surgeon—Mr. Cumberbatch.

Administrator of Chloroform—Mr. Mills.

Casualty Physicians—Dr. Haig, Dr. Davies, Dr. Nias.

Medical Registrar—Dr. S. West.

Surgical Registrar—Mr. Bowlby.

Electrician—Dr. Steavenson.

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Medicine—Dr. Andrew, Dr. Gee.

Clinical Medicine—Dr. Andrew, Dr. Church, Dr. Gee, Sir Dyce Duckworth.

Surgery—Mr. Savory, F.R.S.

Clinical Surgery—Mr. Savory, F.R.S., Mr. Thomas Smith, Mr. Willett, Mr. Langton, Mr. Baker.

Descriptive and Surgical Anatomy—Mr. Langton, Mr. Marsh.

General Anatomy and Physiology—Dr. Klein, F.R.S.

Histology—Dr. Klein, F.R.S.

Chemistry and Practical Chemistry—Dr. Russell, F.R.S.

Materia Medica—Dr. Brunton, F.R.S.

Forensic Medicine—Dr. Hensley.

Public Health—Dr. Thorne Thorne.

Midwifery and the Diseases of Women and Children—Dr. Matthews Duncan, F.R.S.

Botany—Rev. George Henslow.

Pathological Anatomy—Dr. Wickham Legg.

Comparative Anatomy—Mr. Shore.

Ophthalmic Medicine and Surgery—Mr. Power.

Mental Diseases—Dr. Claye Shaw.

DEMONSTRATIONS.

Morbid Anatomy—Dr. Moore.
Diseases of the Skin—Mr. Harrison Cripps.
Diseases of the Ear—Mr. Cumberbatch.
Diseases of the Eye—Mr. Vernon.
Diseases of the Larynx—Mr. Butlin.
Orthopædic Surgery—Mr. Walsham.
Practical Surgery—Mr. Butlin, Mr. Walsham.
Practical Anatomy and Operative Surgery—Mr. Bruce Clarke, Mr. C. B. Lockwood, Mr. Jessop.
Assistant-Demonstrators—Dr. Herringham, Mr. Berry, Mr. Roughton.
Mechanical and Natural Philosophy—Mr. F. Womack.
Practical Physiology—Dr. V. D. Harris.
Assistant-Demonstrators—Dr. Tooth, Dr. Lewis Jones.
Chemistry—Mr. Womack.
Medical Tutor—Dr. S. West.
Assistant-Medical-Tutor—Dr. Ormerod.
Tutor in Midwifery—Dr. W. S. A. Griffith.
Curator of the Museum—Mr. D'Arcy Power.

COLLEGIATE ESTABLISHMENT.

Warden—Dr. Norman Moore.

Students can reside within the Hospital walls, subject to the College regulations.

Ten Scholarships, varying in value from £20 to £130, are awarded annually.

Further information respecting Scholarships, Pupils' Appointments, and other details, may be obtained from Dr Norman Moore, and at the Museum or Library.

ST. BARTHOLOMEW'S HOSPITAL REPORTS.

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STATISTICAL TABLES

OF THE

Patients under Treatment

IN THE WARDS OF

ST. BARTHOLOMEW'S HOSPITAL

DURING 1885.

BY

THE MEDICAL REGISTRAR,

SAMUEL WEST, M.D. (Oxon.)—F.R.C.P.;

AND

THE SURGICAL REGISTRAR,

ANTHONY A. BOWLBY, F.R.C.S.

London:

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1886.

PREFACE.

The Classification of Diseases in the Medical Tables is that adopted by the College of Physicians in their Nomenclature of Diseases.

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ST. BARTHOLOMEW'S HOSPITAL.

1885.

Number of Beds in Medical Wards (including 14 for Diseases of Women)	236
„ „ „ Surgical „ { including 6 for Diseases of Women and 26 for Ophthalmic Cases }	395
„ „ „ Unassigned	41
	672

(Radcliffe Ward was closed during the whole year.)

GENERAL STATEMENT OF THE PATIENTS UNDER TREATMENT DURING THE YEAR 1885.

Patients remaining in January 1st, 1885 :—			
Medical	201		
Surgical	337	... 538	
Admitted during the year 1885 :—			... 7,349
Medical	2,512		
Surgical	4,299	... 6,811	
Discharged :—			
Medical	2,103		
Surgical	4,081	... 6,184	
Died :—			
Medical	401		
Surgical	244	... 645	... 7,349
Remaining in January 1st, 1886 :—			
Medical	209		
Surgical	311	... 520	
Patients brought in Dead		35	
Number of Post-mortem Examinations		512	

OCCUPATIONS OF MALE PATIENTS.

Air Pumpers	2	Cork cutters	3	Goods checkers ...	2
Assistants	14	Coppersmith	1	Gold workers	2
Agents	6	Card maker	1	Greengrocer	1
Artist	1	Confectioner	1	General dealers ...	6
Attendant	1	Coach painter... ...	1	Gardeners	15
		Coal heavers	8	Gutta-percha maker ...	1
Bargemen	12	Carter	1	Gold polisher	1
Bookbinders	20	Cheap Jack	1	Goldsmith	1
Barmen	20	Cabmen	40	Gatekeeper	1
Bricklayers	48	Collar maker	1	Gas factory worker ...	1
Blacksmiths	11	Clinical clerks... ...	2	Grooms...	2
Boatman	1	Cow boy	1	Gas diaphragm maker	1
Brass finishers... ...	12	Chaff cutter	1	Gunsmith	1
Bonnet maker... ...	1	Clock spring maker ...	1		
Bathmen	2			Hatter	1
Brush maker	1	Dock artificers ...	3	Hawkers	17
Boiler makers... ...	6	Dispensers	2	Hospital superintendent	1
Butchers	20	Dustmen	8	Hotel manager ...	1
Bakers	15	Doctors...	2	Harness maker ...	1
Bonnet-shape blocker	1	Drover	1	Housekeeper	1
Blind makers	14	Drapers	15	Haddock curer ...	1
Button maker	1	Decorator	1	Horse-hair dressers ...	2
Basket maker	1	Draughtsmen(engineers')	2	Hammerman	1
Billiard marker ...	1	Dairyman	1		
Boot makers	35			Iron platers	5
Buttermen	2	Excavator	1	Iron workers	10
Bird seller	1	Engineers	9	Ivory workers... ...	2
Box makers	10	Engine drivers ...	18	Instrument makers ...	2
Brewer	1	Errand boys	3	Inspector (gas meter)	1
Bill stickers	4	Envelope maker ...	1	Inspector police ...	1
Builders	3	Electro platers ...	4	Ice seller	1
		Electric light worker...	1	Ironmongers	6
Coopers	2	Envelope gummer ...	1	Inspector	1
Cheesemonger... ...	1				
Clerks	40			Jewellers	3
Cooks (ships')... ...	1	Fruiterer	1	Journeyman	1
Clock spring maker ...	1	Farriers...	6	Jam boiler	1
Carmen	140	Firewood cutter ...	1		
Coal workers	10	French polishers ...	12		
Coachmen	20	Farmers	3	Key makers	2
Cabinet makers ...	25	Fishmongers	8		
Carvers...	3	Fancy soap maker ...	1		
Cellarmen	5	Firemen	3	Lithographers... ...	6
Costermongers ...	21	Frame maker	1	Lead workers	5
Compositors	18	Fishing-rod makers ...	2	Leather cutters ...	4
Corn merchants ...	2			Lathe render	1
Carpenters	30			Labourers	318
Commercial traveller...	1	Gilder	1	Looking-glass silverer	1
Collectors	2	Gasfitters	3	Letter sorters	6
Countryman	1	Glass cutters	5		
Coach builders ...	2	Glass blowers	5		
Cattle dealer	1	Gas stoker	1	Mat maker	1
Caretakers	3				

OCCUPATIONS OF MALE PATIENTS (*continued*).

Map drawer	...	1	Piano maker	...	1	Saddletree maker	...	1
Marketmen	...	3	Pawnbroker	...	1	Stevedores	...	3
Merchant	...	1	Paper enameller	...	1			
Manager (coffee tavern)		1	Perfumer	...	1			
Miner	...	1				Tailors	...	21
Messengers	...	21				Tin-plate workers	...	3
Milkmen	...	4				Tobacconist	...	1
Masons	...	18	Road cleaners	...	5	Telegraphists	...	3
Mirror maker	...	1				Telegraph boys	...	3
Musicians	...	5				Typefounders	...	4
Millers	...	2	Stokers	...	4	Turners	...	3
			Sailors	...	35	Tanners' cutter	...	1
			Smiths	...	3	Ticket collector	...	1
Night watchman	...	1	Shipbuilder	...	1	Tripe dresser	...	1
			Signalmen	...	4	Turncock	...	1
			Ship steward	...	1	Travellers	...	8
Omnibus drivers	...	3	Scale makers	...	2	Tram conductors	...	2
Oilmen	...	2	Shopmen	...	41	Teacher	...	1
Ordnance Service corps		1	Scholars	...	470			
Oyster seller	...	1	Shoemakers	...	25			
Ostlers	...	3	Scavenger	...	1	Upholsterer	...	1
			Shoeblacks	...	4			
			Soldiers	...	9			
Paint brush maker	...	1	Skin dresser	...	1	Van drivers	...	14
Pensioner	...	1	Sawyer	...	1	Van guards	...	17
Paper hangers	...	3	Students	...	14			
Potmen	...	18	Shipwrights	...	4			
Porters	...	150	Signalmen	...	3	Well digger	...	1
Painter and sign writer		1	Sewerman	...	1	Warder	...	1
Piano tuners	...	2	Scene painter	...	1	Wiresmiths	...	2
Paper ruler	...	1	Stationer	...	1	Wire drawers	...	4
Plumbers	...	8	Sugar refiner	...	1	Wharfinger	...	1
Policemen	...	23	Stockbrokers	...	2	Warehousemen	...	14
Printers	...	78	Shepherds	...	2	Wood engravers	...	2
Photographers	...	3	Silk dyer	...	1	Wood carvers	...	2
Painters	...	48	Stonemasons	...	11	Window cleaner	...	1
Pattern maker	...	1	Stone grinder	...	1	Writers	...	5
Publicans	...	9	Spring makers	...	2	Watermen	...	11
Paper colourers	...	2	Schoolmaster	...	1	Willow cutter	...	1
Packers	...	12	Silk winder	...	1	Watch makers	...	3
Poulterers	...	2	Sweeps	...	7	Wheelwrights	...	2
Paper workers	...	7	Station master	...	1	Weaver	...	1
Purser	...	1	Steward	...	1			
Piano packer	...	1	Sack maker	...	1			
Packing-case makers	...	6	Storekeepers	...	2	Zinc workers	...	2
Plasterers	...	7	Stick mounters	...	4			

OCCUPATIONS OF FEMALE PATIENTS.

Artificial-flower makers	8	Feather sorters	2	Nurses	24
		Feather dressers	2	Needlewomen	3
		Factory girls	12		
		Flower seller	1		
Barmaids	4	Feather curler	1		
Box makers	16	Furriers	17	Rag sorter	1
Bonnet makers	7				
Bag makers	14				
Bookfolders	7				
Brush drawers	2	Governess	1	Servants	375
Bottle washers	2	Glover	1	Shopwomen	12
Bottler	1			Sempstresses	17
Bookkeepers	4			School girls	280
		Housemaids	48		
		Harlots	71		
		Housekeepers	8	Tailoresses	13
Cooks	26			Trimming maker	1
Charwomen	27			Tie makers	8
Cigar makers	3				
Corset presser	1	Ironers	2		
Collar makers	5				
Cap makers	3			Umbrella makers	6
Clerks	4				
		Lace maker	1		
		Laundresses	28		
				Waitresses	8
Dressmakers	21			Ward maids	6
		Machinists	22		
		Mantle makers	4		
		Mould coverer	1		
Envelope folder	1	Milkwoman	1		

MEDICAL REPORT.

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
GENERAL DISEASES, A.																																							
Febricula	31	18	13	...	...	3	5	...	...	4	3	...	...	4	1	...	...	3	2	...	...	3	2	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Varicella	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever	6	4	1	...	1	...	...	...	...	2	...	...	1	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Variola (1)	11	5	4	...	2	...	1	...	...	...	...	...	...	...	2	...	...	1	1	...	...	3	...	...	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...
Measles (2)	28	18	8	1	1	9	3	...	1	5	3	1	...	...	1	...	...	3	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Typhoid Fever (3)	65	29	29	7	...	...	...	...	...	1	2	...	...	3	5	1	...	7	6	3	...	16	11	2	...	2	5	1	...	...	...	...	...	...	...	...	...	...	...
Diphtheria (4)	26	11	8	1	6	1	2	1	4	3	1	...	1	3	2	...	1	1	1	...	...	1	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Rötheln	5	5	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ague (5)	4	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...
Dysentery (6)	7	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	4	...	...	...	2	...	...	...	...	...	...	...	...	...
Mumps	2	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rigor	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Septicæmia (7)	13	...	6	1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	3	1	4	...	2	...	1	...	...	2	...	...	...	...	...	...	...
	200	103	70	11	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
GENERAL DISEASES,																																							
B.																																							
Rheumatic Fever (9) ...	205	116	85	2	2	.....	.....	.....	1	7	5	1	1	10	8	.....	.....	35	22	1	.....	40	32	.....	.....	21	13	.....	.....	1	2	.....	.....	2	3	.....	.....	.....	.....	.....	.....
Rheumatism	61	24	37	...	...	.....	.....	.....	.....	1	.....	.....	.....	4	2	.....	.....	4	6	.....	.....	8	12	.....	.....	3	5	.....	.....	4	9	.....	.....	...	3	.....	.....	.....	.....	.....	.....
Gonorrhœal Rheumatism ...	6	6	...	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....	.....	.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Osteo-arthritis	1	1	...	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gout (8)	27	25	2	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	3	.....	.....	.....	11	2	.....	.....	9	.....	.....	.....	1	.....	.....	.....
Muscular Rheumatism ...	4	3	1	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Lumbago	2	1	1	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Debility	29	2	27	...	...	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	4	.....	.....	.....	15	.....	.....	.....	5	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Destitution	6	3	3	...	...	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Anæmia	23	2	21	...	...	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	8	.....	.....	.....	11	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Chlorosis	5	...	5	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purpura Simplex (10) ...	5	3	2	...	...	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
„ Hæmorrhagica (11).	2	2	...	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hæmophilia (12)	2	1	1	...	...	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
GENERAL DISEASES, B (*continued*).																																							
Leucocythæmia (13) ...	5	2	2	1	...						1																	1	1			1								
Lymphadenoma (14) ...	2	1	...	1	...																									1				1						
Large Spleen	1	...	1	...	...						1																													
Pernicious Anæmia ...	2	...	...	1	1											1																								1
Myxœdema (15) ...	7	2	5	...	...																									1	3			1	2					
Adenitis	2	2	...	...	...					1								1																					
Addison's Disease (16) ...	7	4	1	1	1																	1		1	1	1				2	1								
Cretinism	2	1	1	...	...														1			1																	
Obesity	3	1	2	...	...																						1							1	1				
Amyloid Disease (18) ...	4	1	...	2	1						1					1			1									1											
Rickets	4	2	2	...	...	2	1							1																								
Syphilis (17)	3	1	2	...	...																		1							1	1								
Nil	8	4	4	...	...																	1	1			1	2			1					1			1	
General Tuberculosis ...	5	...	...	3	2			1											2									2											
	433	210	205	11	7																																			

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
LOCAL DISEASES. DISEASES OF THE NERVOUS SYSTEM.																																							
Hydrocephalus	4	2	1	...	1	2	1	...	1																													
Tubercular Meningitis (19)...	17	1	...	10	6	1	...	7	5							1	1			1				1															
Simple ,, ...	4	1	1	2	...			1			1	1		1																									
Cervical ,, ...	1	1	...	...	...					1																													
Concussion	1	1	...	...	...					1																													
Sunstroke	1	1	...	...	...									1																									
Apoplexy (20)	12	...	...	9	3															1								1		1	2		4					3	
Hemiplegia (21)	37	23	14	...	...									1	1							3	3			4				6	4			4	4			5	2
Embolism (22)	2	...	...	1	1																			1										1					
Softening of Brain... ...	2	...	...	1	1																			1											1				
Abscess of Brain	1	...	...	...	1																	1																	
Tumour of Brain (23) ...	10	4	4	1	1									1	1			1	2			1				1	1		1						1					
Cerebellar Tumour ...	1	...	...	1	...																																		
Cerebral Symptoms ...	1	1	...	...	...																					1		1											
Bulbar Paralysis	1	1	...	...	...																					1													
Otitis Interna (24)	17	4	6	2	5	...	1	...	1	2	3	...	...	1	...	...	2	...	...	...	...	1	2	1	1	...	...	1	1										
Menière's Disease	1	1	...	...	...																	1																	
Hypochondriasis	1	1	...	...	...																	1																	
Idiotcy	3	2	1	...	...	1	1	...	...																					1									
Insanity	4	3	1	...	...																		1			3													
Mania	3	2	1	...	...																		1							2									

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE NERVOUS SYSTEM (*continued*).																																							
General Paralysis of the Insane	1	1	...	...	...																							1											
Hydrophobia (25)	1	1	...	...	...									1																									
Spinal Irritability	1	1	...	...	...																					1													
Lateral Sclerosis	1	1	...	...	...																	1																	
Spastic Paraplegia	2	2	...	...	...																	1				1													
General Spinal Paralysis ...	1	1	...	...	...																											1							
Poliomyelitis Anterior ...	5	3	2	...	...																	1	1			1				1	1								
Progressive Muscular Atrophy	4	3	1	...	...																	1								1	1					1			
Chronic Myelitis	5	3	2	...	...									1	1															2	1								
Paraplegia (27)	13	6	5	2	...					2												2	2			1	3	1		1		1							
Locomotor Ataxy (28) ...	11	6	4	1	...																	1					2	1		5	2								
Disseminated Sclerosis ...	9	7	2	...	...																	2				1				3	1				1			1	
Diphtheritic Paralysis (29) ...	4	2	1	1	...	1	...	1							1			1																					
Infantile Palsy	1	1	...	...	...									1																									
Atrophy of Calves	1	1	...	...	...																					1													
Unilateral Atrophy of Tongue (30)	1	1	...	...	...																					1													

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE NERVOUS SYSTEM (*continued*).																																							
Pseudo-Hypertrophic Paralysis (31)	1	1	...	...	...																	1																	
Torticollis (32)	2	...	2	...	...									1																1									
Paralysis of Muscular Spine	1	1	...	...	...																	1																	
Tremors	1	1	...	...	...																									1									
Contracture	1	...	1	...	...																					1													
Aphonia	1	...	1	...	...																		1																
Vertigo	1	1	...	...	...													1																					
Paralysis Agitans	4	1	3	...	...																													1	1			1	
Epilepsy	30	18	12	...	...	1				2				5				4	3			1	3			2	1			7				1					
Convulsions	6	4	2	...	...	4	2																																
Hysteria	22	2	20	...	...													1	6				8			1	4				2								
Chorea (33)	47	12	35	...	...					6	5			3	17			3	12				1																
Hemicrania	2	1	1	...	...																	1	1																
Headache	4	3	1	...	...																	2	1							1									
Neuralgia	5	5	...	...	...													1				4																	
Sciatica	10	6	4	...	...									1					1							3				2				1	1			1	
Bell's Palsy	3	3	...	...	...																	2								1									
Anæsthesia	1	1	...	...	...																													1					
Wrist-drop, Lead	1	1	...	...	...																	1																	
Multiple Neuritis	1	...	1	...	...																																		
	327	150	127	**31**	**19**																																		

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE CIRCULATORY SYSTEM.																																									
Morbus Cordis ([34])—																																									
Unspecified	10	2	3	**3**	**2**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	**2**	1	2	...	...	1	1	...	...	...	**1**	...	...	...	...	...	**1**	...	...	...	...
Aortic	34	17	8	**7**	**2**	...	...	...	...	...	...	...	...	1	...	...	...	3	2	**1**	...	2	3	**1**	**1**	3	1	**1**	...	7	...	**2**	...	1	1	**2**	**1**	1	...	...	...
Mitral	98	18	62	**2**	**16**	...	...	...	...	2	3	...	...	3	4	...	**1**	6	15	...	**1**	1	17	**1**	**2**	1	6	...	**5**	5	14	**1**	**6**	...	2	...	**1**	...	1	...	...
Mitral and Aortic ...	21	5	6	**5**	**5**	...	...	...	...	...	**1**	...	...	...	2	...	...	...	...	**1**	**1**	1	2	**1**	**1**	1	1	**1**	**1**	3	1	**1**	**2**	...	...	...	...	...	...	...	...
Pericarditis ([35])	14	2	2	**3**	**7**	...	...	...	...	...	...	**1**	...	2	...	**2**	...	...	...	**1**	...	...	1	**1**	**1**	...	...	...	**2**	...	1	...	**1**	...	...	...	...	...	...	...	**1**
Ulcerative Endocarditis ([36])	5	...	...	**1**	**4**	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	**1**	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fatty Heart ([37])	8	1	...	**3**	**4**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	**1**	...	...	...	**2**	**1**	1	...	**1**	**1**	...	...
Angina	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Cardialgia	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Aneurism of Aorta ([39]) ...	19	12	2	**4**	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	6	1	**1**	...	2	1	**3**	**1**	3	...	...	...	...	...	...
Rupture of Aorta ([38])	1	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...
Phlegmasia Dolens... ...	11	2	9	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	3	...	...	...	4	...	...	1	1	...	...	...	...	...	...	...	...	...
Absence of Pulse in Radial	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Exophthalmic Goitre ([40]) ...	6	...	5	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	3	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...
	231	63	97	**28**	**43**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE RESPIRATORY SYSTEM.																																									
Laryngitis	5	3	1	**1**	...	3	1	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Œdema of the Glottis (41)...	2	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croup	3	3	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	**1**	...	...	...
Spasmodic Croup	5	3	2	...	...	3	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Whooping Cough	8	5	2	...	**1**	5	1	...	**1**	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Asthma ,, ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Emphysema...	30	17	6	**6**	**1**	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	**1**	...	6	1	**1**	...	3	3	...	...	4	1	**2**	**1**	2	...	**2**	...
Bronchitis	71	25	37	**3**	**6**	5	7	**1**	**2**	3	3	...	...	...	...	**1**	...	1	2	...	...	4	2	**1**	...	3	3	...	...	3	8	...	**1**	6	5	...	...	...	7	**1**	**2**
Phthisis (42)...	124	34	27	**49**	**14**	...	1	**2**	...	1	...	...	...	...	...	**2**	...	2	4	...	**3**	13	5	15	**2**	9	12	16	**4**	5	4	10	**5**	4	...	**2**	...	1	**2**	...
Pneumonia (43) ...	138	74	35	**21**	**8**	5	4	**1**	**1**	4	8	**1**	...	4	8	...	...	14	3	**1**	...	25	3	**5**	**2**	13	5	**9**	**2**	8	2	**3**	**1**	...	2	...	**2**	1	...	**1**	...
,, Catarrhal ...	14	6	5	**2**	**1**	4	3	**2**	**1**	2	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
,, Interstitial ...	2	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Gangrene of Lung	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...
Hæmoptysis...	16	12	3	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	2	...	...	3	1	**1**	...	2	...	...	...	1	...	...	...	1	...	...	...
Empyema (44)	19	6	4	**6**	**3**	...	1	...	**1**	2	2	**2**	...	...	1	...	...	...	...	...	...	2	...	**1**	**1**	1	...	...	**1**	1	...	**2**	...	...	...	**1**	...	...	...	...	...
Pleurisy, Dry	28	21	7	...	...	...	...	...	...	1	1	...	...	1	2	...	...	3	...	...	...	10	1	...	...	2	2	...	...	2	1	...	...	2	...	...	...	...	...	...	...
,, with Effusion (45)	39	27	8	**3**	**1**	...	...	...	...	4	...	...	...	1	...	...	...	3	1	...	...	7	4	**1**	...	4	2	...	...	5	1	...	**1**	2	...	**2**	...	1	...	...	...
Pleurodynia...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cancer of Lung	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...
Mediastinal Tumour ...	2	1	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	1	...	...	...	...	...	...	...
	510	241	138	**95**	**36**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE DIGESTIVE SYSTEM.																																							
Stomatitis	6	2	4	...	...	1	2	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tonsillitis	29	10	19	...	...	...	1	...	...	1	...	...	...	4	...	...	...	3	4	...	...	1	13	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Dysphagia	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Stricture of Œsophagus (45)	5	1	1	**3**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	**2**	...	1	...	**1**	...
Vomiting	4	1	3	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Dyspepsia	24	7	17	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	3	...	...	1	1	...	...	1	5	...	...	1	4	...	...	3	3	...	...	...	...	...
Constipation	14	3	11	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	...	4	...	...	2	...	...	...	1	2	...	...	...	1	...	...	...	...	...
Diarrhœa	23	11	11	**1**	...	3	3	**1**	...	...	1	...	...	...	1	...	...	5	4	...	...	1	1	...	...	...	...	...	...	...	1	...	...	2	...	...	...	...	...	...
Intestinal Colic	10	3	7	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	...	...	...	1	1	...	...	1	...	...	...	...	2	...	...	...	...	2	...	...	...	...
Gastric Ulcer (47)	31	5	21	**1**	**4**	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	9	...	**1**	2	4	...	**1**	...	...	...	...	3	2	**1**	**2**	...	...	...	...
Hæmatemesis	20	10	10	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2	2	...	...	2	4	...	...	4	2	...	...	1	1	...	...	...	...	...
Gastritis	8	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2	...	...	1	1	...	...	1	...	...	...	1	...	...	...	...	...	...
Gastralgia	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cancer of Stomach (48) ...	12	3	4	**3**	**2**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	3	**2**	**2**	1	...	**1**	...	1	1	...	...
Dilated Stomach	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Enteritis	8	5	2	...	**1**	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	2	1	...	...	1	...	...	...	1	...	...	**1**	...	...	...	...	...	...	...
Typhlitis (49)	10	4	4	...	**2**	...	...	...	...	...	...	...	...	...	1	...	...	...	3	...	...	3	...	...	...	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	**1**
Chronic Ulcer of Large Intestine	5	3	1	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	**1**	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...
Intestinal Obstruction (50)...	7	4	...	...	**3**	...	...	...	...	...	...	...	...	2	...	...	...	...	**1**	...	...	1	...	...	...	...	...	...	...	...	...	**1**	1	...	...	...	...	...	...	**1**
Cancer of Rectum	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE DIGESTIVE SYSTEM (*continued*).																																									
Melæna	1	...	1	...	...																				1																
Jaundice	14	10	4	...	...									2				1				1	3			2				1	1			2				1			
Gallstones (51) ...	9	3	6	...	...																					1	2				2							2	2		
Cirrhosis (52)	30	14	...	**13**	**3**																	1		**2**		6		**3**	**1**	4		**6**	**2**	2		**2**		1			
Peritonitis, Acute (53) ...	10	2	5	**3**	...					1								1	2	**1**			3					**1**											**1**		
„ Chronic ...	3	...	3	...	...									1									1				1													
„ Tubercular ...	4	1	3	...	...						2								1			1																		
„ Malignant ...	4	...	1	...	**3**																						1						**2**				**1**			
„ Suppurative ...	3	...	1	**1**	**1**																						1	**1**											**1**	
Amyloid Liver	1	...	1	...	...									1																										
Large Liver...	5	4	1	...	...					1				1									1			2														
Cancer of Liver	14	2	2	**7**	**3**																							**2**			1							**2**	**2**	**3**	**2**
Abscess of „ (54) ...	9	4	...	**3**	**2**																					3			**2**			**1**		1					**2**		
Hydatid „ (55) ...	12	2	7	**2**	**1**					1									3			1	1		**1**		2				**1**							1	**1**		
Ascites	12	5	6	**1**	...	1	1			1					1			1	2									**1**			1	1				1				1		
Abdominal Tumour (56) ...	16	5	11	...	...	2																1	1			1	5			1	2				2			1		
Phantom „ ...	1	...	1	...	...																										1										
Calculus in Pancreas (57) ...	1	...	...	**1**	...																																**1**				
Tænia	1	...	1	...	...						1																														
	373	130	177	**41**	**25**																																				

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE URINARY SYSTEM.																																							
Incontinence	1	1	...	...	...					1																													
Dysuria	1	...	1	...	...																								1										
Cystitis	3	...	3	...	...																		1				1				1								
Pyuria	3	1	2	...	...		1												1			1																
Albuminuria	5	3	2	...	...																		1			2	1										1			
Hæmaturia	11	9	2	...	...																	2				2	1			1	1			1			3			
Hæmoglobinuria (58) ...	2	2	...	...	...																					2													
Nephritis, Acute Parenchymatous (59) ...	23	8	13	**2**	...	1	2	**1**	...	4				1	2			1	1			2	3			2	1	**1**						1						
„ Chronic Parenchymatous	32	20	6	**1**	**5**							**1**						1	2			2	1		**3**	12	3	**1**	**1**	4			**2**				1			
Granular Kidney (60) ...	10	...	1	**7**	**2**															**1**				**2**			1	**2**					**2**		**2**					
Uræmia (61)...	2	...	...	**2**	...																			**1**				**1**											
Glycosuria (62)	21	8	6	**6**	**1**													1	1			2	1	**3**		2	1	**3**		1	1		**1**		1		2	1		
Diabetes Insipidus (63) ...	1	...	1	...	...														1																				
Floating Kidney	1	...	1	...	...																						1												
Tumour (64)	4	...	2	**1**	**1**																		1								**1**	**1**				1			
Renal Calculus (66)... ...	5	4	...	**1**	...													1				1				2		**1**											
Pyelitis (65)	2	2	...	...	...																	1															1			
	127	58	40	**20**	**9**																																		

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE FEMALE GENERATIVE SYSTEM.																																							
Vascular Caruncle	3	...	3	...	...																	1				1							1						
Cyst of Labium	2	...	2	...	...																					1							1						
Lupus Vulvæ	13	...	13	...	...																	4				3				2			2				2		
Suppurating Vaginal Cyst...	2	...	2	...	...																					1				1									
Imperforate Hymen ...	2	...	2	...	...													1								1													
Vaginitis	9	...	9	...	...																	5				2				1			1						
Vaginismus	2	...	2	...	...																	2																	
Erosion of Cervix	1	...	1	...	...																									1									
Hypertrophy of Cervix ...	2	...	2	...	...																									1			1						
Catarrh „ ...	5	...	5	...	...																	3				1				1									
Atresia „ ...	1	...	1	...	...																					1													
Malignant Disease of Cervix	1	...	1	...	...																									1									
Menstruation	1	...	1	...	...																					1													
Leucorrhœa...	1	...	1	...	...																					1													
Dysmenorrhœa	1	...	1	...	...																	1																	
Metrorrhagia	6	...	6	...	...													3				1				2													
Menorrhagia	2	...	2	...	...																	1								1									

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE FEMALE GENERATIVE SYSTEM (*continued*).																																							
Retroversion	4	...	4	...	...																				1				3										
Retroflexion...	5	...	5	...	...																4				1														
Prolapse	4	...	4	...	...																				3				1										
Uterine Enlargement ...	4	...	4	...	...																1				1				2										
,, Polypus	6	...	6	...	...																1				4				1										
,, Fibroid	27	...	27	...	...																6				13				6				2						
Cancer of Uterus	18	...	17	...	1															1					8				6				3						
Metritis	1	...	1	...	...																				1														
Perimetritis...	15	...	15	...	...													1				6				6				1				1						
Parametritis	25	...	25	...	...													3				13				8				1										
Vaginocele	3	...	3	...	...																	1								2										
Hæmatocele...	3	...	3	...	...																	1				2														
Ovaritis	8	...	8	...	...																	6				1				1										
Ovarian Cyst	5	...	4	...	1																					3		1										1			
Cancer of Ovary	1	...	...	...	1																										1										

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
AFFECTIONS CONNECTED WITH PREGNANCY.																																							
Pregnancy	1	...	1	...	...																				1														
Vomiting of Pregnancy ...	3	...	3	...	...																		3																
Extra-Uterine Pregnancy...	1	...	...	...	1																						1												
Retroversion of Gravid Uterus...	6	...	6	...	...																		2				3				1								
Placenta Prævia	1	...	1	...	...																		1																
Abortion	13	...	13	...	...																		3				9				1								
Miscarriage	3	...	3	...	...																		2				1												
Retained Placenta	3	...	3	...	...																						3												
Ruptured Perinæum ...	8	...	8	...	...																		6				2												
Porro's Operation (68) ...	1	...	...	...	1																				1														
Pelvic Tumour	3	...	3	...	...																		2				1												
	226	...	221	...	5																																			

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE CUTANEOUS SYSTEM.																																							
Eczema	3	1	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Urticaria	4	3	1	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Herpes Zoster	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Erythema	4	1	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...
„ Nodosum ...	5	...	5	...	...	...	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Alopœcia	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scabies	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	19	5	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
POISONS.																																							
Hydrochloric Acid (67) ...	1	...	...	1	...																						1												
Nitric „	2	...	...	1	1																						1	1											
Oxalic „	1	...	1	...	...																						1												
Carbolic „	2	2	...	...	...	2																																	
Iodine	1	...	1	...	...																						1												
Turpentine	1	...	1	...	...		1																																
Phosphorus	1	1	...	...	...													1																					
Mercury (Tremors) ...	1	1	...	...	...																					1												
Lead Colic	14	12	2	...	...													1	1			4				6	1			1								
Morphia Habit	1	1	...	...	...																									1								
Attempted Suicide by Hanging...	1	1	...	...	...																													1					
Delirium Tremens	19	16	2	1	...																	4				9	2	1		3								
Potus...	13	10	3	...	...																	2				5				3	3							
	58	44	10	3	1																																		

ABSTRACT OF TABLE I.

DISEASES.	Total Number of Cases completed during the Year.	Number of Cases discharged.		Deaths.		Remaining in the Hospital at the end of the year 1885.
		M.	F.	M.	F.	
GENERAL DISEASES, A	200	103	70	**11**	**16**	
Do. Do. B	433	210	205	**11**	**7**	
LOCAL DISEASES—						
Diseases of the Nervous System	327	150	127	**31**	**19**	
,, Circulatory System	231	63	97	**28**	**43**	
,, Respiratory System	510	241	138	**95**	**36**	
,, Digestive System	373	130	177	**41**	**25**	
,, Urinary System	127	58	40	**20**	**9**	
,, Female Generative System	226	...	221	...	**5**	
,, Cutaneous System	19	5	14	...	...	
CONDITIONS NOT NECESSARILY ASSOCIATED WITH GENERAL OR LOCAL DISEASES—						
POISONS—	58	44	10	**3**	**1**	
	2,504	1,004	1,099	**240**	**161**	209
		2,103		**401**		
		2,504				

APPENDIX TO TABLE I.

1. *Variola.*—F was suffering from glycosuria.

2. *Measles.*—M 3 : Had epididymitis. F 2½ : Died of croup during the attack.

3. *Typhoid Fever.*—Four cases, M 10, M 16, M 22, M 28 : Died of perforation. One case, M 23 : Had no eruption. One, M 18 : Had parotid bubo. One, M 20 : Suppurating glands in groin. One, M 25 : Abscess in abdominal walls. One, F 20 : Had hæmaturia. Two, F 27 and F 34 : Had periostitis afterwards. Two had pleuritic effusion, F 38 and M 18 : The latter died. One, F 38 : Developed phthisis after.

4. *Diphtheria.*—One, F 2½ : Had pneumonia of the left base and recovered. One, F 3, died with an abscess in the right lung.

5. *Ague.*—One case, M 32 : Had quotidian ague caught in the Isle of Sheppey. One, M 22 : Had Peshawar fever 4 years ago, and again 3 years ago (quotidian), but no return until present attack. One, M 30 : Had ague in Brazil 2 years ago, and died in the Hospital. Post-mortem, large spleen with infarcts ; blood pink ; no leucocythæmia ; epistaxis ; thrombosis of right femoral.

6. *Dysentery.*—M 30 : Left Egypt well on May 29, reached England June 19, and was taken ill with acute dysentery on June 20.

7. *Septicæmia* —Five occurred after parturition, and two died. Two more after abortions, both died. One with a suppurating ovarian cyst died. In another fatal case acute meningitis was found. One not fatal followed a ruptured perinæum.

8. *Gout.*—M 32 : In a type founder, associated with lead poisoning. M 42 : Associated with jaundice and ascites. M 44 : In a case with mitral regurgitation.

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 15.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1st Attack	86	46	37	1	2				1	3	4	1	1	4	3			17	10			10	10			11	8			1					2						
2nd Attack	64	37	27	...	...					3	1			4	3			10	6			15	12			5	3				2								
3rd Attack	20	13	7	...	...									1	1			1	2			8	3			2								1	1				
4th Attack	9	3	6	...	...														2			1	4			2													
5th and upwards	6	4	2	...	...													3				1	1				1												
Uncertain	18	12	5	1	...					1				1	1			3	2	1		5	1			1	1							1						
	203	115	84	2	2				1	7	5	1	1	10	8			34	22	1		40	31			21	13			1	2			2	3					

Percentage of Cases left with Permanent Heart Mischief :—

1st Attack	59·
2nd Attack	73·3
3rd Attack	85·0
4th Attack	89·0
5th and more	83·5
Uncertain	83·0

Or out of 203 cases in 138 the heart was permanently affected, and in 10 others the condition was doubtful. The percentage for all the cases is therefore 68 ; and even reckoning in, for the sake of argument, all the rheumatism cases, the percentage is still 54.

	Total.	M.	F.	No Heart Disease.		Permanent Heart Disease.										Myocarditis.		Heart Doubtful.	
						Mitral.		Aortic.		Aortic and Mitral.		Pericarditis.		Pericarditis and Mitral.					
				M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1st Attack	86	47	39	16	14	20	21 (b)	...	...	1	...	2	2 (d)	4	1	1 (a)	...	3	1
2nd Attack	64	37	27	10	7 (f)	21 (e)	16	3	...	2	...	1	2	...	2	...	...	...	...
3rd Attack	20	13	7	2	1	5	4	...	...	3	1	1	...	1	1	...	...	1	...
4th Attack	9	3	6	1	...	...	3	1	1	1	2	...	...	...	...	...	...	...	...
5th and more	6	4	2	...	1	3	1	...	...	...	...	...	...	1	...	...	...	...	...
Uncertain...	18	13	5	3	...	5	1	2	...	1	...	2	1	...	...	...	...	4	1

Average age of males = 22·0 years.
" " females = 22·5 "

51/86 had some permanent heart mischief = 59·0 per cent.; the proportion being the same in the two sexes.

(*a*) A boy, 15, had myocarditis, but no murmur was left behind.
(*b*) In one girl, 16, chorea developed shortly afterwards. In another, a baby, F 2 years, death occurred; had been ailing 14 days, and 6 days before death the wrist swelled.
(*c*) Two cases had a general erythema.
(*d*) F 8, had chorea following, and died of pneumonia.

(*e*) M 34, had pneumonia of right base during illness, and recovered. F 27, had chorea after the 1st attack.
(*f*) F 24, F 40, both had erythema nodosum.

47/64 had permanent heart mischief = 73·3 per cent.

17/20 had permanent heart mischief = 85 per cent.

8/9 = 89 per cent. had permanent heart mischief.

15/18 = 83 per cent. had permanent heart mischief. One case had chorea, and the murmur probably dates from that.

10. *Purpura Simplex.*—Associated in M 31 with dysentery.

11. *Purpura Hæmorrhagica.*—M 21 : Epistaxis profuse with spots 3 years ago, 1½ years, and 1 year ago.

12. *Hæmophilia.*—F. 35 : Frequent profuse epistaxis.

M 6 : Great grandmother ... had a brother affected.

Grandmother ... „ brother (8th child) affected.

Mother ... „ brother (8th child) affected.

boy boy girl girl girl boy boy girl girl

affected, and died at 1½ years. patient.

13. *Leucocythæmia.*—M 46 : Had ague and dysentery in India 2 years ago ; abdomen enlarged for 7 months. M 6 : Died. Had numerous small hæmorrhages in heart, kidneys, and skin.

14. *Lymphadenoma* —M 49 : Had pleuritic effusion, 4 pints removed. M 50 : Died. Glands enlarged in neck, thorax, and abdomen. Mediastinal glands greatly enlarged and pressing on vessels. Localised deposits in liver, kidneys, and spleen.

15. *Myxœdema.*—F 52 : Described in *Clin. Soc. Trans.*, 1880.

16. *Addison's Disease.*—F 41 : Getting dark for 1 year, more so since confinement 8 months ago. M 31 : 3½ years, getting weak ; colour as now 2 years. M 46 : 3½ years, pain right side, and sickness ; bronzing 12 months ; patches on lips ; hard palate, inside of cheeks and under tongue. Two cases were fatal. M 24 : Phthisis of both apices ; suprarenals, right small, left very large, entirely caseous. F 24 : 3 months ago overworked ; bronzing developed rapidly ; vomiting throughout ; patches on nipple, bends of elbows, and knees ; none on mucous membranes ; developed in hospital sore throat with headache and high temperature, 103° ; delirium and incessant vomiting ; some patches on tonsils (? diphtheritic). Post-mortem both suprarenals large, and caseous throughout ; both lungs phthisical.

17. *Syphilis.*—M 9 : Congenital ; gummata in liver, kidney, both organs amyloid, as also spleen, and to a slight extent stomach. F. 23 : Had gummata of left median nerve and brachial artery ; fits for 6 months before admission ; slight hemiplegia.

18. *Amyloid Disease.*—M 25 : Caries of spine. M 12 : Disease of knee. F 30 : Ulcer of rectum.

19. *Tubercular Meningitis.*—M 18 : Had headache on May 2nd; was comatose on the 9th, and had optic neuritis then ; had been ill for some time with double tubercular pleuritic effusion and tubercular peritonitis ; developed also pericarditis by extension.

20. *Apoplexy.*—7 cases had granular kidneys. One, M 51, had also a rupture of the heart. F 34 : Hæmorrhage came from a ruptured aneurysm on the middle cerebral artery. F 48 : Had hæmorrhage into pons and in 4th ventricle.

21. *Hemiplegia.*—M 12 : Was hit with a stone behind the left ear 12 months ago ; 4 days after had headache and vomiting, and became delirious; 3 months after, discharge from the ear ; since then right hemiplegia with aphasia, and rigidity has developed. M 20 and F 28 : Had mitral incompetence (probably embolic). M 35 and M 36 : Had granular kidneys. F 23 : Had probably cerebral tumour.

Right side.		Left side.	
M	F	M	F
14	8	7	5

22. *Embolism.*—F 30: Developed rheumatic fever 2 months after parturition; was admitted with mitral regurgitation, and subsequently aortic incompetence developed; in hospital crossed hemiplegia occurred with aphasia—limbs on left side, face and tongue on right. M 57: Had mitral stenosis; this was the second "fit"; was found insensible, but quickly rallied so as to speak. Optic neuritis developed. The embolism was on the left middle cerebral artery.

23. *Tumour of Brain.*—F 38: Cancerous deposits. 1st. On cortex near ascending frontal convolution, and reaching white matter. 2nd. Nearly reaching corpus striatum on left side. 3rd and 4th. Small on each side of cerebellum. 5th. On right crus. M 52: Sarcoma. On right side 5 masses—one in right corpus striatum and optic thalamus and adjacent parts; two in corpus striatum; one in optic thalamus; and one in posterior lobe. On left side three in centrum ovale. A soft sarcoma was found in the mediastinum between the bronchi, but not perforating any vessel.

24. *Otitis Interna.*—5 had meningitis, and 1 of them died; 6 had septicæmia, and 5 died. The one that recovered (F 20) had pericarditis and peritonitis, and on recovery a sarcoma which was found on the right thigh was successfully removed. Of the fatal cases, one (F 18) had abscesses in the lung. Another (M 25) had an abscess over the mastoid process, with meningitis and purulent thrombosis of the lateral sinus. Another (F 30) had also thrombosis of lateral sinus. Another case (M 31) died of cerebellar abscess.

25. *Hydrophobia.*—M 11: Bitten in leg 2 months before by a dog; well till two or three days before December 15. Then began to feel pain in the leg, extending along course of sciatic. Lived 4 days in hospital. The temperature rose to 104·2° just before death.

26. *Poliomyelitis Anterior.*—M 45: Developed 7 months after a blow on head, affecting both arms and legs. M 30: Possibly lead, affecting roots of 5th, 6th, and 7th cervical nerves (arm and forearm), including supinator longus.

27. *Paraplegia.*—M 37: Had granular kidney. M 47: Cancer of bones spinal cord being compressed at level of 3rd vertebra. Growths in viscera.

28. *Locomotor Ataxy.*—M 30: 2 years tingling in legs, followed by pains. April 20—Legs became rigid and pains worse. 22nd—Paraplegia. 24th—Great jumping in legs. 27th—Bedsores. Died June 14. No post-mortem.

29. *Diphtheritic Paralysis.*—In 3 the palate only. The fatal case (M 1½) died of bronchitis. M 14: Diphtheria, October, 1884. January, 1885, weak fingers and palate, and thin legs, some paraplegia.

30. *Atrophy of Tongue.*—Probably syphilitic.

31. *Pseudohypertrophic Paralysis.*—(*cf.* Hosp. Rep. for 1881.)

32. *Spasmodic Torticollis.*—F 47: Had it for 6 months at age of 27. Absent till 6 months ago, when it again appeared.

33. *Chorea.*—In 16 there was no morbus cordis. In 3 of them it was the second, and in 1 the third attack. In 6 others the condition of the heart is not specified; presumably there was also no affection of it.

In 22 there was a systolic apex murmur, and of these 6 gave a history of rheumatism; all antecedent to chorea. 1, M 7, had rheumatic fever after scarlet fever 4 months ago; chorea later.

Two cases had hemichorea. F 19: Right side, probably hysteria. M 9: Right with rigidity and excessive tendon reflexes.

34. *Morbus Cordis.*—

Mitral Stenosis.—33 cases out of the 98 mitral. In 23 (2 M—21 F) there was only presystolic murmur. In 10 (3 M and 7 F) there was a double murmur (presystolic and systolic). In 2 more cases, both fatal

(M 42, F 30), the mitral stenosis was associated with aortic disease, and in the latter (F 30) there were several aneurysms on the cerebral arteries—one at the origin (bend) of each cerebral artery, another on the right at the bifurcation, and a fourth close to the anterior communicating artery of the left side.

35. *Pericarditis.*—Except 2, all were associated with endocardial lesions. 1 (F 30) died, and simple adherent pericardium was found; the other (F 42) recovered, but had thrombosis of the left arm during attack. F 45: Had aortic stenosis, with granular kidney. 8 had mitral disease—4 males, 1 died: 4 females, all died, 2 of them having granular kidneys. Another (F 28) was interesting, as suffering also from peripheral atrophic neuritis. 8 months before death had a fall, and was blind for a week. "Swelled all over," and soon found fingers, sides of face, and both legs numb and tingling. 3 others, all fatal (M 14, M 24, F 16), had both aortic and mitral disease, as well as pericarditis.

36. *Ulcerative Endocarditis.*—2 had vegetations only on the aortic valves; the other 2 on aortic and mitral. 1 (M 25) had abscesses in liver, spleen, and lungs.

37. *Fatty Heart.*—F 18: Was admitted with epistaxis and menorrhagia and purpuric spots. Had suffered from epistaxis and "bruises" 9 years ago, and again 3 years ago; a case, probably, of hæmophilia. 4 cases were associated with, and probably due to, atheroma. In 1 (F 58) heart weighed 13 ozs.; both femoral arteries were plugged, and both legs were in a condition of gangrene at time of death; the aorta was very atheromatous, and the kidneys granular. In another (M 56) the coronary arteries were involved, so that the mouths were very small. In one fatal case of mitral disease (M 45) there was an embolus in the right popliteal artery and in the right brachial, and the right leg gangrened. The same occurred in another case (F 55), when the left femoral was plugged. In another fatal case (M 44) of mitral disease, there was an aneurysm of the outer wall of the left ventricle projecting beneath the pericardium, and the kidneys were granular. In a case of aortic disease (M 54), in which the kidneys were granular, the patient died of pneumonia. Hemiplegia occurred in the course of heart disease in 6 cases—once on the right side (F 21), mitral stenosis, and associated with rigidity and ankle clonus. In 3 cases (F 21, F 22, F 19) there was mitral stenosis. In 2 cases (F 45, M 18) there were vegetations on the mitral. In 1 case (F 28) there was double aortic mischief, and an aneurysm the size of a small walnut was found on the right middle cerebral. The hemiplegia came on 1 month after confinement.

38. *Rupture of Aorta.*—The aorta was very atheromatous, and had given way at the junction of the ascending and transverse part of the arch. There was no aneurysm. The kidneys were granular.

39. *Aneurysm of the Aorta.*—M 47: Was an old case in 1883, and was Tufnelled with great relief. Pain returned 2 months ago, after an interval of over 2 years. One case (F 42) burst externally (thoracic) (Elizabeth Ward). In another (M 32) the aneurysm formed 1½ inch above aortic valves: perforated ribs and sternum and formed a large external swelling. Death was due to dyspnœa from pressure. One case (M 45) was in descending aorta and burst into left pleura. One (M 40) started from near cœliac axis, and developed partly below and partly above the diaphragm, and ruptured finally into left pleura. One (M 48) (ascending part) ruptured into right lung. One (M 39) (abdominal) was greatly relieved by "Tufnelling."

40. *Exophthalmic Goitre.*—F 17: Anæmia 5 months: palpitation 2 months; goitre 2 days. F 20: Exophthalmos 1 year; palpitation 6 months. F 43 (fatal; no post-mortem): 4 years' duration. Temperature 100° on admission; rose to 106° on day of death. Delirium and vomiting for last few days.

41. *Œdema of Glottis.*—Arose in the course of severe cellulitis of the neck. M 60.

42. *Phthisis.*—2 cases had morbus cordis. M 47 : Double aortic. F 18 : Mitral and aortic vegetation, with infarcts in spleen. 3 cases had diseases of the kidney. M 41 : Chronic parenchymatous nephritis. M 47 : Cystic kidney. M 46 : Amyloid disease ; died with uræmia.

43. *Pneumonia.*—

Right Apex.—12 M, 2 died ; 4 F, 1 died.

Right Base.—30 M, 3 died ; 13 F, 1 died ; 1 (M 41) had pleuritic effusion ; 23 ozs. serum removed, and recovered.

Left Apex.—6 M, 1 died ; 1 F.

Left Base.—38 M, 8 died ; 19 F, 3 died.

Whole Lung.—2 cases, both right side, both fatal—M 16, M 34.

Double.—Both apices, 1 case (F 11) recovered ; both bases, 2 cases (M 25, M 38), both died ; whole right lung and left base, 2 cases (M 20, M 43), both died. In 1 case (M 25), right base and left apex, recovered. In 2 cases, both children, the pneumonia was deep-seated, and gave no dulness. 4 cases had symptoms of delirium tremens, and 3 died ; 2 with apex pneumonia. In 2 cases (M 33, M 43) pneumonia of the left base was complicated with pericarditis ; 1 recovered. In 3 there was morbus cordis ; 2 died. M 32 : Had mitral stenosis and old adherent pericardium. M 47: With double aortic disease ; recovered. Pleuritic effusion followed in 4 cases ; 1 (M 52) died ; 2 (M 20, M 41) tapped (serous) and recovered ; 1 (F 8) had empyema, which was freely incised, 80 ozs., and recovered.

44. *Empyema.*—M 50 : After free incision, died with gangrene of lung. F 30 : Developed after pneumonia. M 23 : Was in hospital in 1883, and discharged in January, 1884. In March, 1884, spat pus ; free incision made ; left hospital in November, 1884, discharging ʒii—ʒiii in 24 hours ; December, 1884, pus reaccumulated ; died in November, 1885, with amyloid disease. M 7 : Had caries of spine, to which empyema was due ; died with amyloid disease. M 9 : Had small right empyema, and died with pericarditis.

45. *Pleurisy with Effusion.*—8 pints, M 68 ; 6 pints, M 43 ; 5 pints, M 26 ; 4 pints, M 27 and M 42 ; 3½ pints, F 31 and F 32 ; removed by paracentesis. In 1 case (F 48) effusion was on both sides, and was due to spreading of inflammation along tissues of neck to mediastinum after diphtheria. In 1 case (M 55) the effusion was bloody and offensive ; fatal. 1 (F 21) developed after typhoid fever. In 1 case (M 29) the effusion was double, and on death general amyloid disease (liver and kidneys) was found ; the kidneys were also granular, and the patient syphilitic.

46. *Stricture of Œsophagus.*—3 cases due to cancer. M 62 : Close to stomach. M 56 : Spreading from stomach ; glands in mediastinum and neck only affected. M 55 : In middle of œsophagus ; secondary deposits in liver, kidney, suprarenals, and peritonæum.

47. *Gastric Ulcer.*—6 died of perforation into peritonæum. F 22 : Ulcer on anterior surface, just below lesser curvature, the size of a sixpenny piece, and was partly healed. F 32 : Ulcer in middle of greater curvature. M 51 : Hourglass contraction of stomach, the perforation being ½ inch in diameter upon lesser curvature. M 58 : Aperture ½ inch. F 56 : Cancer of stomach, with perforation on lesser curvature near pylorus. M 51 : Ulcer on anterior surface 2 inches from pylorus.

48. *Cancer of Stomach.*—F 46 : Cancer of stomach commencing with large intestine. M 47 : Cancer of stomach and liver ; had suffered from indigestion for 5 years, and had lost flesh for 3 months.

49. *Typhlitis.*—F 36 : Had abscess near cæcum, and died of pneumonia. F 60 : Had ulcer in vermiform appendix and also in duodenum.

50. *Intestinal Obstruction.*—F 23: Two adhesions, connected probably with chronic glandular enlargement, one 4 feet from duodednum, the other 2 feet from the valve; perforation had occurred at the upper. M 63: Died of volvulus of cæcum 4 inches from vulva. *This man made the first stethoscope in England he states.* M 48: Strangulation of small intestine by a band 2½ feet above the valve.

51. *Gallstone.*—F 40: Jaundice began June, 1884; no pain; gall-bladder enlarged; incised; discharge of colourless bile, which contained bile salts; left with fistula.

52. *Cirrhosis of Liver.*—M 32: Had very deep jaundice for 14 months, ascites for 1 month. Three days before death became delirious and comatose, with petechiæ. Temperature 106·6° on day of death. M 54: Died of pneumonia. M 34: Fatal; had severe epistaxis, with purpuric spots on legs. M 45: Fatal; had severe hæmoptysis. M 44: Fatal; for 18 months frequent vomiting, and occasionally blood; 9 months losing flesh, and hæmatemesis more often; in hospital several attacks of hæmatemesis; became unconscious, and died. F 44: Died in a condition of uræmia. M 47: Fatal; had marked hectic temperature varying from 98° to 103° or 104°. M 40: Fatal; associated with mitral incompetence (vegetations). M 49: Fatal; had chronic pericarditis with calcareous plates.

53. *Acute Peritonitis.*—F 63: Died; abscess of abdominal walls burst into peritonæum. M 47: Abscess close to pancreas, which ruptured into peritonæum 3 days before death; had had occasional attacks of pain since typhoid in 1882.

54. *Abscess of Liver.*—In 7 there was a history of dysentery. M 38: Fever and ague in India; for 12 months pain in epigastrium and shivering; in December, 1884, coughed up pus; returned from India in May, and had an attack of dysentery on the way home; was expectorating pus during stay in hospital, but left relieved. M 35: Had dysentery and fever 3 years ago in Tropics; free incision made in hospital with great benefit. M 31: Was tapped twice, and then freely incised, with relief. M 37: Died of peritonitis by extension, not rupture. M 72: Died of septicæmia, the abscess being started by gallstones.

55. *Hydatids of Liver.*—5 cases were tapped, with cure. M 25: Noticed for 6 months; tapped, suppurated; free incision, evacuation; left with only slight discharge. M 50: Incised; some had made way into urethra; patient had phthisis and died. F 34: Incised; recovery.

56. *Abdominal Tumour.*—M 47: Pain in abdomen 3 years; worse for 1 year; tumour noticed then. In Oct., 1884, disappeared after pain; March, 1885, punctured, coffee-coloured fluid, no bile, no urea; tapped again in June, and twice subsequently; 11 and 7½ pints; recovery.

57. *Calculus in Pancreas.*—M 50: Chronic inflammation, peritonitis, and death.

58. *Hæmoglobinuria.*—M 35: After getting wet in Feb., 1883, lasted for 3 weeks off and on; no recurrence till Nov., 1884, then in John Ward; admitted again in Dec., 1884, for an attack, and was then free till Jan. 18, 1885, and from then till the present.

59. *Parenchymatous Nephritis.*—2 chronic cases and 1 acute died of uræmia. 2 (M 30, F 23) had aortic disease, the latter also mitral. F 20: Died of pneumonia whole right lung.

60. *Granular Kidney.*—4 died of uræmia. In 1 (M 19) there was a free erythematous rash before death. 1 (M 51) had a heart of 17 ozs. with aortic growths. 1 (F 47) had breast removed for cancer in 1882; on post-mortem had cancer of stomach. M 35: Had gout. M 22: Chronic pericarditis and extreme optic neuritis. All these cases were fatal.

61. *Uræmia.*—Several of the cases mentioned above died of uræmia. In 1 of these (M 38) the cause was dilated pelvis, ureter, and bladder, from stricture of urethra.

62. *Glycosuria.*—2 cases (M 32, M 33) died of phthisis. 1 (M 38) died of pneumonia. 3 died of coma, all males and 24 years of age; in 1 preceded by pain in abdomen; in 1 blood was raspberry-juice colour. In 1 (M 48) there was gout. In 1 (M 16) there was a large abscess in neck, which had healed. In 1 (M 28) diabetes had lasted for 2 years, and the chief trouble for the last year was œdema of the feet. In 1 case (M 33) diabetes developed after severe grief; and in another (M 46) after a severe fall.

63. *Diabetes Insipidus.*—M 16: For 15 years about 2 gallons daily; no loss of flesh; no albumen; no sugar; urea = 100 grains; sp. gr. 1010; weight, 3 stone 3 lbs.; no suprapubic hair; family history negative.

64. *Renal Tumour.*—2 (F 44, M 41) were cancers.

65. *Pyelitis.*—M 26: Twice tapped and then laid open; 11 pints of fluid.

66. *Calculus.*—M 55: Pain in left flank on July 24th, 1885; no water passed till 24th; bladder empty; after then a few ounces only daily till 27th; on 28th 6 pints in a few hours. Urea = 422 grains, on 29th 1½ pint. Urea = 118 grains. Died of uræmia on August 1st.

67. *Poisons.*—

Hydrochloric Acid.—Swallowed acid 3 months ago; was admitted with pyloric obstruction and hæmatemesis.

68. F 28: Married 21 months; labour commenced June 6th; seen by Dr. Gordon June 7th, at 10 p.m.; admitted June 8th; operation performed at once; death on June 11th.

SURGICAL REPORT.

TABLE I.

Showing the Total Number of Cases under Treatment during the Year 1885, *with the comparative Frequency and Mortality of each Disease at different Ages.*

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
GENERAL DISEASES.																																			
Erysipelas—																																			
Simple	108	64	39	3	2	1	3	1	1	7	3	1	...	6	10	...	...	15	5	...	...	13	7	...	...	13	9	...	...	7	3	1	...	1	...	...	...
Phlegmonous	14	8	4	...	2	1	...	...	...	...	...	...	...	...	1	...	...	1	1	...	1	2	1	...	...	3	1	...	1	1	...	...	...	...	...	...
Cellulitis	47	37	6	2	2	1	...	...	...	...	...	1	...	2	...	...	...	9	1	...	...	8	3	...	...	5	...	1	...	8	1	...	...	4	...	1	2
Septicæmia	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hæmophilia	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hysteria	6	...	6	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Leprosy (Anæsthetic)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Struma	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Tetanus	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Gangrene—																																			
Senile	7	2	2	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	1	1	2
From Cold	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Embolic	3	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...
Diabetic	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Inflammatory	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Idiopathic (of Scrotum)	3	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	1	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
VENEREAL DISEASES.																																			
Syphilis—																																			
Primary Sore	16	14	2	...	...									2	1			10	1			2													
Constitutional Syphilis	69	42	26	...	1									8	8			21	14	...	1	10	2			2	1					1	1		
Congenital Syphilis	2	1	1	...	...									1					1															
Ulcers	15	9	6	...	...													3	1			3	4			1				2	1				
Gumma	3	1	2	...	...														1			1					1								
Node	1	1	...	...	...																					1									
Rhagades	1	1	...	...	...													1																	
Skin Eruptions	5	...	5	...	...														5																
Soft Sores	20	16	4	...	...									1	1			12	2			2								1	1				
Gonorrhœa	50	14	36	...	...									5	17			5	15			4	4												
Gonorrhœal Rheumatism	1	1	...	...	...									1																					
Phimosis	...	...	...	...	...									8				7				2													
Paraphimosis	2	2	...	...	...									1								1													
Warts	6	1	5	...	...										1			1	3												1				
Condylomata	2	...	2	...	...										1								1												
Epididymitis	3	3	...	...	...									1								2													
Bubo	4	4	...	...	...													4																	
TUMOURS.																																			
Malignant Tumours of Doubtful Nature	9	6	3	...	...																					2	3			3				1			
Carcinoma—																																			
Adenoid Carcinoma—																																			
Rectum	5	3	2	...	...														1															3	1	

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
TUMOURS (*continued*).																																			
Carcinoma (*continued*)—																																			
Colloid—																																			
Breast (Recurrent)	1	...	1	...	...																	1													
Spheroidal-celled—																																			
Breast (Primary)	51	...	49	...	2																	9				15				14		1		11		1
,, (Recurrent)	10	...	10	...	...																	2				6				2						
Colon	1	...	...	...	1																														1
Kidney	1	...	...	...	1																											1			
Ovary	1	...	...	...	1																							1							
Œsophagus	3	...	...	3	...																						2			1					
Pancreas	1	...	...	1	...																												1		
Rectum	20	8	10	2	...													1				2	1			1	3			6	4	1		1		
Skin of Chest	1	...	1	...	...																						1								
Epithelioma—																																			
Bladder	1	...	...	1	...																												1		
Cheek	5	5	...	...	...																	1				1				1				2		
Forehead	1	...	1	...	...																													1		
Foot	1	1	...	...	...																									1						
Leg	2	1	...	...	1																					1									1
Lip	6	6	...	...	...																									3				3		
Larynx	1	...	...	1	...																											1			
Lymphatic Glands (Recurrent) ...	2	1	1	...	...																									1				1		
Nostril	1	1	...	...	...																					1									
Œsophagus	2	...	...	2	...																											1		1	
Palate	6	6	...	...	...																					2				2				2		

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
TUMOURS (*continued*).																																			
Epithelioma (*continued*)—																																			
Penis	8	7	...	1	...																	2					1			1				4			
Scrotum	1	1	...	...	...																					1									
Tongue	18	18	...	...	...																					2				9				7			
Tongue and Glands (Recurrent) ...	2	2	...	...	...																					2				1				1			
Floor of Mouth	5	5	...	...	...																									2				3			
Vulva	4	...	4	...	...																		1								2				1		
Rodent Ulcer	13	10	3	...	...																	1				2				3				4	3		
Sarcoma—																																			
Abdominal Wall	1	1	...	...	...																									1							
Axilla	2	...	...	2	...										1								1													
Back	1	...	1	...	...																														1		
Bladder	1	...	...	1	...																										1						
Breast	10	1	9	...	...													1	2				2				3				2						
Buttock	3	...	3	...	...														2								1										
Clavicle	1	...	1	...	...																						1										
Epididymis	1	1	...	...	...																														1		
Face	1	1	...	...	...																					1										
Femur	1	1	...	...	...													1																			
Femoral Glands	1	1	...	...	...																	1															
Forearm	2	1	...	1	...									1						1																	
Groin	1	...	1	...	...																														1		
Humerus	1	...	...	1	...											1																					
Leg	1	1	...	...	...																					1										
Neck	5	3	1	1	...													1					1					1		2						

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
TUMOURS (*continued*).																																			
Sarcoma (*continued*)—																																			
Nerves of Cervical Plexus	1	...	1	...	...									1																					
Naso-Orbital	1	...	1	...	...									1																					
Naso-Pharynx	1	1	...	...	...													1																	
Maxilla Superior	3	1	...	**1**	**1**												**1**																1		
Pelvis	1	...	1	...	...																										1				
Shoulder	1	1	...	...	...													1																	
Skull	5	2	1	**2**	...										**1**							2									1			**1**	
Thigh	1	...	1	...	...									1																					
Thoracic Wall	1	1	...	...	...																					1									
Thyroid Gland	1	...	1	...	...																										1				
Testis	1	...	...	**1**	...																			**1**											
Chondro-Sarcoma—																																			
Parotid	4	...	4	...	...																					3					1				
Fibro-Sarcoma—																																			
Buttock	1	...	1	...	...									1																					
Thigh	1	1	...	...	...																					1									
Parotid	1	1	...	...	...													1																	
Lympho-Sarcoma—																																			
Neck	2	...	...	**2**	...															**1**												**1**			
Myxo-Sarcoma—																																			
Parotid	4	1	3	...	...																		2			1					1				
Angeioma—																																			
Nævus (Capillary and Venous)	11	5	6	...	...	3	6							1				1																	

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
TUMOURS (*continued*),																																			
Cysts—																																			
Dermoid—																																			
Face	6	4	2	...	...	2	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Floor of Mouth	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Neck	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Serous—																																			
Neck	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Superior Maxilla	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Popliteal Space	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Breast	6	...	6	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	3	...	...	1	...	...	...	...	...
Thyroid	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Sebaceous	22	13	9	...	...	...	...	...	...	1	...	...	...	3	1	...	...	2	4	...	...	2	1	...	...	3	2	...	...	3	...	...	...	...	...
Ovarian	16	...	14	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...	4	...	...	2	...	1	...	...	2	...	1	...	2	...	...	2	...	...
Enchondroma	4	1	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Exostosis and Osteoma	14	4	10	...	...	1	...	...	...	...	...	...	...	1	8	...	...	1	2	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Fibroma	14	7	7	...	...	...	1	...	...	...	...	...	...	2	1	...	...	3	1	...	...	1	3	...	...	...	1	...	...	...	...	...	1	...	...	...
Fibro-Adenoma—																																			
Breast	14	...	14	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	5	...	...	...	4	...	...	...	2	...	...	...	...	...	...	...	...	...
Lipoma	22	7	15	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2	4	...	...	...	5	...	...	1	3	...	...	2	2	...	...	1	...	...
Diffuse Lipoma	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Mole—																																			
Face	3	...	3	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Myxoma—																																			
Parotid	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Papilloma	6	1	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	1	1	...	...	...	1	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
TUMOURS (*continued*).																																			
Polypus	18	9	9	...	...	...	1	...	...	1	1	...	...	2	3	...	...	2	3	...	...	1	...	...	...	2	1	...	...	1	...	...	...	...	...	...
Pulsating Tumour—																																			
Thigh	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Goitre	2	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Tumour of Doubtful Nature	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
MALFORMATIONS AND DEFORMITIES.																																			
Hare-Lip	22	16	6	...	...	16	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cleft-Palate	28	9	19	...	...	2	2	...	...	4	5	...	...	3	9	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...
Genu Valgum	24	18	6	...	...	5	...	...	...	6	4	...	...	6	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Genu Varum	4	4	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Malformation of Hands and Feet ...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Talipes—																																			
Calcaneus	2	...	2	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cavus	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Equinus	5	3	2	...	...	1	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Equino-Varus	12	9	3	...	...	4	1	...	...	2	...	...	...	3	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Equino-Cavus	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Planus	2	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Varus	4	4	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Valgus	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Congenital Dislocation of Hips ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Wry Neck	6	3	3	...	...	...	1	...	...	1	...	...	...	2	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
MALFORMATIONS AND DEFORMITIES (*continued*).																																			
Spina Bifida	2	1	...	...	**1**	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lateral Curvature of Spine	6	1	5	...	...	...	...	...	...	...	...	...	...	1	3	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Meningocele	2	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ectopia Vesicæ	2	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Webbed Fingers	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hypospadias	3	3	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phimosis	64	64	...	...	...	27	...	...	...	11	...	...	...	22	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Imperforate Vagina	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Imperforate Anus	3	1	...	**2**	...	1	...	**2**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
DISEASES OF THE NERVOUS SYSTEM.																																			
Neuralgia—																																			
Arm	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...
Back	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Breast	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Coccydinia	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Face	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Finger	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sciatic	5	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...
Stump	7	6	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	5	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Neuritis	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
Infantile Paralysis	4	3	1	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Epilepsy after Head Injury	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...

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						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE NERVOUS SYSTEM (*continued*).																																			
Memory Lost after Head Injury ...	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Muscular Inco-ordination after Head Injury	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Hemiplegia after Head Injury ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Meningitis	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tubercular Meningitis	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Paralysis—																																			
Forearm (after Injury)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Forearm (after Rheumatism) ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
DISEASES OF THE EYE.																																			
Conjunctiva—																																			
Conjunctivitis...	12	6	6	...	...	2	...	...	...	1	1	...	...	2	2	...	...	1	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Gonorrhœal Conjunctivitis	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granular Ophthalmia	10	2	8	...	...	...	...	...	...	...	...	...	...	1	2	...	...	...	2	...	...	1	2	...	...	...	...	...	...	...	2	...	...	...	...	...
Pterygium	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Sclerotic—																																			
Tumour...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Cornea—																																			
Keratitis	43	15	28	...	...	4	7	...	...	1	6	...	...	3	6	...	...	...	2	...	...	2	2	...	...	2	3	...	...	2	...	...	...	1	2	...	...
Interstitial Keratitis... ...	5	3	2	...	...	3	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ulcers	9	6	3	...	...	1	...	...	...	...	...	...	...	2	2	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE EYE (*continued*).																																			
Cornea (continued)—																																			
Opacities	7	4	3	...	...	...	...	...	...	...	1	...	...	2	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...
Staphyloma	2	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Fistula	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Kerato-Iritis	7	3	4	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Hypopion	4	3	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...
Iris—																																			
Iritis	9	3	6	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	1	3	...	...	...	...	...	...	1	...	...	...	1	1	...
Occlusion of Pupil	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
Irido-Choroiditis	3	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Lens—																																			
Cataract—																																			
Hard	76	50	26	...	...	...	1	...	...	...	...	...	...	...	1	...	...	3	...	...	...	4	...	...	...	3	4	...	...	7	6	...	33	14	...	...
Soft	17	11	6	...	...	4	2	...	...	3	2	...	...	2	1	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Traumatic	5	4	1	...	...	...	...	...	...	1	...	...	...	2	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Opaque Capsule	11	9	2	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	2	2	...	2	...	...
Aphakia	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Retina, Optic Nerve, and Vitreous Humour—																																			
Optic Neuritis	5	4	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Optic Atrophy	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Retinitis	4	3	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Choroid—																																			
Choroiditis	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE	Total	Discharged		Died		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE EYE (*continued*).																																			
General Affections of the Eye																																			
Glaucoma	8	5	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	1	...	...	3	1	...	...
Panophthalmitis	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Sympathetic Ophthalmia	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Amaurosis	3	1	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Asthenopia	4	1	3	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Atrophy of Globe	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Intra Ocular Haemorrhage	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Glioma	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Strabismus																																			
Internal	12	21	21	...	...	2	2	...	...	9	6	...	...	8	12	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
External	2	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Errors of Refraction																																			
Hypermetropia	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diseases of the Lachrymal Apparatus																																			
Lachrymal Abscess	5	1	4	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	2	...	...	...	1	...	...	...	...	...	...	...	...
Lachrymal Fistula	3	2	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lachrymal Obstruction	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dacryo-Cystitis	4	...	4	...	...	...	2	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diseases of the Eyelids																																			
Blepharitis	4	2	2	...	...	1	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ectropion	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE EYE (*continued*).																																			
Diseases of the Eyelids (*continued*)—																																			
Entropion	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Distichiasis	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Tarsal Cyst	3	...	3	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rodent Ulcer	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Diseases of the Orbit—																																			
Abscess	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Necrosis	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
DISEASES OF THE EAR.																																			
Otorrhea	3	1	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Slate Pencil in Ear	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Suppuration in Middle Ear	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
DISEASES OF THE RESPIRATORY SYSTEM.																																			
Nose—																																			
Adenoid Vegetations	2	2	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Deformed by Injury	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Destroyed by old Ulceration ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Epistaxis	11	7	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...	...	2	...	...	...	2	2	...	...	1	...	...	...	1	...	...
Ozæna	2	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Septum Deviated	17	10	7	...	...	...	2	...	...	...	2	...	...	5	...	...	...	3	2	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...
Turbinate Bones Enlarged	2	...	2	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE RESPIRATORY SYSTEM (*continued*).																																			
Larynx—																																			
Œdema of Glottis	2	...	1	...	**1**	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...
Double Abductor Paralysis	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Syphilitic Laryngitis...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Croup and Diphtheria	19	3	2	**10**	**4**	2	1	**9**	**4**	2	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...
DISEASES OF THE VASCULAR SYSTEM.																																			
Aneurysm—																																			
Multiple Embolic	1	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
External Iliac...	3	1	...	**2**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	**1**	...	...	1	...	...	...
Popliteal	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Popliteal (Recurrent Pulsation) ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Subclavian	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...
Traumatic Arterio-Venous Aneurysm:																																			
Femoral Vessels in Hunter's Canal	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Arteritis Obliterans	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Phlebitis	17	...	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2	4	...	...	...	3	...	...	...	3	...	...	2	1	...	...
Varicose Veins	21	11	9	...	**1**	...	...	...	...	...	...	...	...	4	1	...	...	6	3	...	**1**	1	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...
DISEASES OF THE LYMPHATIC SYSTEM.																																			
Glands—																																			
Inflamed and Suppurating	8	6	2	...	...	1	...	...	...	...	...	...	...	1	1	...	...	3	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Strumous	17	9	8	...	...	...	...	...	...	...	...	...	...	3	3	...	...	5	3	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Lymphadenoma	3	1	1	...	**1**	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE LYMPHATIC SYSTEM (*continued*).																																			
Lymphatics—																																			
Lymphangitis	7	6	1	...	...					2				3				1								1									
Elephantiasis	1	...	1	...	...														1																
DISEASES OF THE DIGESTIVE SYSTEM.																																			
Mouth—																																			
Enlarged Tonsils	6	3	3	...	...	1				1	1			1	2																				
Tonsillitis	2	1	1	...	...									1	1																				
Ranula	1	...	1	...	...						1																								
Salivary Calculus	1	1	...	...	...													1																	
Ulceration of Gums	1	1	...	...	...					1																									
Stomatitis	1	...	1	...	...		1																												
Cancrum Oris	3	...	1	...	**2**				**2**						1																				
Tongue—																																			
Syphilitic Ulcer	2	2	...	...	...																	1								1					
Simple Ulcer	2	2	...	...	...									1																		1			
Pharynx—																																			
Erysipelatous Inflammation... ...	1	...	...	**1**	...														**1**																
Submucous Hæmorrhage	1	1	...	...	...																	1													
Œsophagus—																																			
Fibrous Stricture	4	...	4	...	...										3								1												
Stricture of Doubtful Nature ...	6	6	...	...	...													1				1				1							3			
False Teeth Swallowed	2	1	1	...	...													1								1									

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE DIGESTIVE SYSTEM (*continued*).																																			
Intestines—																																			
Fæcal Fistula	5	4	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	...
Prolapse after Colotomy	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Peritonitis—																																			
Idiopathic Purulent	2	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tubercular	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Perityphlitis	2	2	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Perityphlitic Abscess...	4	...	...	3	1	...	...	...	...	...	...	1	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Intussusception	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Acute Enteritis	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Obstruction of Intestines within Abdomen	2	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Hernia—																																			
Reducible—																																			
Inguinal	7	7	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	...	1	...	...	...	1	...	...
Umbilical	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Irreducible—																																			
Femoral	3	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	1	...	...	...	...
Inguinal	5	3	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	1	...
Umbilical	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Ventral	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
Inflamed—																																		...	
Umbilical	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE DIGESTIVE SYSTEM (*continued*).																																			
Hernia (*continued*)—																																			
Strangulated—																																			
Femoral	29	1	19	**1**	**8**	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	**1**	...	6	...	**2**	1	3	...	**3**	...	7	**1**	**2**
Inguinal	23	21	...	**2**	...	...	...	...	...	...	...	...	...	2	...	...	...	3	...	...	...	4	...	...	...	7	...	...	...	2	...	**1**	...	3	...	**1**	...
Umbilical	1	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**
Hydrocele of Hernial Sac—																																			
Femoral	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Rectum—																																			
Anal Fissure	14	9	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	1	2	...	...	3	2	...	...	3	...	...	...	...	...	...	...
Anal Fistula	43	34	8	**1**	...	3	...	...	...	...	...	...	...	1	...	...	...	8	6	**1**	...	12	1	...	...	8	1	...	...	1	...	...	...	1	...	...	...
Anal Prolapse	4	3	...	...	**1**	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Anal Pruritus	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anal Ulcer	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Hæmorrhoids	39	31	7	...	**1**	...	...	...	...	...	...	...	...	2	...	...	...	8	2	...	...	9	3	...	...	7	1	...	**1**	3	1	...	...	2	...	...	...
Pain in Rectum	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Recto-Vesical Fistula	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Recto-Vaginal Fistula	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stricture—																																			
(*Fibrous*)	8	1	3	...	**4**	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	2	...	**4**	...	...	...	...	...	...	...	...	...	...	...	...
(*After Operation for Fistula*) ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(*After Operation for Imperforate Anus*)	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tubercular Ulceration	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Diseases of the Genito-Urinary Organs.																																			
Tubercular Disease of Genito-Urinary Tract	4	2	...	**2**	...	...	...	...	...	...	...	...	...	1	...	**1**	...	1	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...
Kidney—																																			
Calculus	8	3	2	...	**3**	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	**1**	1	...	...	...	1	1	...	**1**	...	...	...	...	1	...	**1**
Pyelitis	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pyonephrosis	3	1	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Floating Kidney	3	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...
Perinephritic Abscess	2	...	1	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	1	...	...	...	...	...	...	...	...	...	...
Old Nephrotomy	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Old Nephrectomy	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bladder—																																			
Calculus	10	7	...	**3**	...	1	...	...	...	...	...	...	...	3	...	...	...	1	...	...	...	...	...	...	...	...	...	...	**1**	...	2	...	**2**	...	...	...
Cystitis	10	7	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	1	1	...	...	2	1	...	...	2	...	...	...
Suppuration around Bladder	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Prostate—																																			
Hypertrophy	11	8	...	**3**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	**3**	...
Chronic Inflammation	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...
Urethra—																																			
Simple Stricture	91	81	...	**10**	...	...	...	...	...	...	...	...	...	11	...	...	...	...	...	**2**	...	34	...	**1**	...	17	...	**2**	...	11	...	**2**	...	8	...	**3**	...
Traumatic Stricture	4	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Stricture after Amputation of Penis	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...

TABLE I. (*continued*).

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE GENITO-URINARY ORGANS (*continued*).																																			
Urethra (*continued*)—																																			
Fistula	4	4	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...
Dilatation	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Prolapse	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calculus	2	2	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tunica Vaginalis—																																			
Vaginal Hydrocele	18	18	...	...	...	...	...	...	...	2	...	...	...	3	...	...	...	1	...	...	...	5	...	...	...	5	...	...	...	1	...	...	...	1	...	...	...
Congenital Hydrocele	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Encysted Hydrocele of Testis ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Hæmatocele	4	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Spermatic Cord—																																			
Varicocele	10	10	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	4	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Hæmatocele	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Testis—																																			
Acute Orchitis...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chronic Orchitis	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tubercular and Strumous Disease ...	11	11	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	3	...	...	...	4	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Uterus—																																			
Ulcerated Cervix	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Dysmenorrhœa	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE GENITO-URINARY ORGANS (*continued*).																																			
Vagina—																																			
Vaginitis	2	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Recto-Vaginal Fistula	2	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Vesico-Vaginal Fistula	5	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...
Ruptured Perineum	9	...	9	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	4	...	...	...	2	...	...	...	1	...	...	...	...	...	1	...	...
Dysuria	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Hæmaturia	12	10	2	...	...	1	...	...	...	...	...	...	...	3	1	...	...	4	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	...
Pyuria	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
DISEASES OF THE ORGANS OF LOCOMOTION.																																			
Bones—																																			
Abscess—																																			
Scapula	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tibia...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Curvature and Shortening from Injury to Epiphysis	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Caries—																																			
Humerus	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ilium	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Metacarpal Bones	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Phalanges	3	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Spine...	36	21	14	1	...	5	3	...	...	7	2	...	...	4	2	...	...	3	6	...	...	1	1	1	...	...	...	...	1	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE ORGANS OF LOCOMOTION (*continued*).																																			
Bones (*continued*)—																																			
Caries (*continued*)—																																			
Tarsus	3	1	2	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Metatarsus	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tibia...	3	...	3	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Numerous Bones	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Necrosis—																																			
Clavicle	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Coccyx	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Femur	13	9	4	...	...	...	...	...	...	...	...	...	...	4	3	...	...	4	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Ilium	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Mastoid	8	3	2	2	1	2	...	...	...	1	1	1	...	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Maxilla	9	4	4	1	...	...	1	...	...	1	1	1	...	...	...	...	...	1	1	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...
Metatarsus	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nasal Bones	4	1	3	...	...	...	...	...	...	1	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Os Calcis	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Palate	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phalanges	18	14	4	...	...	...	1	...	...	...	...	...	...	1	1	...	...	3	1	...	...	3	...	...	...	2	...	...	...	1	1	...	4	...	...
Rib	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sacrum	2	...	...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Scapula	2	2	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Skull...	3	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...
Tarsus	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tibia...	11	7	4	...	...	...	...	...	...	...	...	...	...	3	1	...	...	1	...	...	...	...	1	...	...	2	2	...	...	...	...	...	1	...	...	...
Osteitis Deformans	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE ORGANS OF LOCOMOTION (*continued*)—																																			
Bones (*continued*)—																																			
Chronic Osteitis	5	1	4	...	...	1	...	...	...	...	1	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Periostitis—																																			
(Acute)—																																			
Femur	2	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Humerus	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Many Bones	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Os Calcis	2	1	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tibia	3	2	...	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(Chronic)—																																			
Humerus	4	1	3	...	...	...	...	...	...	...	1	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Femur	7	6	1	...	...	...	...	...	...	1	...	...	...	2	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
Maxilla Inferior	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Tibia	8	4	4	...	...	...	...	...	...	...	1	...	...	1	1	...	...	3	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Rachitic Curvature of Bones ...	11	6	5	...	...	2	...	...	...	4	2	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Joints—																																			
Anchylosis—																																			
Ankle	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elbow	6	4	2	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Finger	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Hip	3	...	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...
Knee	10	7	3	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	2	...	...	2	...	...	...	4	...	...	...	...	...	...	...	...	...	...
Shoulder	9	6	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	1	...	...	4	1	...	...	...	...
Toe	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE ORGANS OF LOCOMOTION (*continued*).																																			
Joints (*continued*)—																																			
Chronic or Strumous Disease—																																			
Ankle	18	5	11	**1**	**1**	...	2	...	...	...	4	...	...	2	1	...	...	1	1	**1**	...	1	2	...	**1**	1	1	...	...	...	...	...	...	...	...	...
Carpal Joints	4	1	3	...	...	...	1	...	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elbow	12	12	...	...	...	...	...	...	...	2	...	...	...	3	...	...	...	3	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...
Finger	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Hip	87	53	27	**5**	**2**	11	5	...	**2**	12	10	...	...	24	8	**2**	...	3	2	...	...	2	1	**2**	...	1	...	**1**	...	...	...	...	1	...	...
Knee	52	34	18	...	...	1	1	...	...	5	5	...	...	11	4	...	...	10	3	...	...	5	4	...	...	2	1	...	...	...	...	...	...	...	...
Sacro-Iliac	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Shoulder	7	6	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	4	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Tarsal Joints	5	3	2	...	...	...	1	...	...	3	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wrist	8	3	5	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	2	...	...	3	...	...	...	...	...
Osteo-Arthritis—																																			
Hip	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Knee	3	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Shoulder	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Acute Suppurative Arthritis	3	2	...	**1**	...	...	...	...	...	1	...	...	...	...	**1**	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Charcot's Disease—																																			
Knee	4	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	1	...	...
Tarsal Joints	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Synovitis	60	36	24	...	...	1	...	...	...	2	2	...	...	6	4	...	...	8	13	...	...	9	4	...	...	9	1	...	...	...	...	...	1	...	...
Loose Bodies in Joint—*Knee*	6	4	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	1	...	...	1	1	...	...	...	...	...	...	...	...
Internal Derangement—*Knee*	2	2	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF THE ORGANS OF LOCOMOTION (*continued*).																																			
Old Excisions—																																			
Elbow	3	3	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Hip	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Knee	3	2	1	...	...	...	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wrist	2	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Synovial Cysts—																																			
Elbow	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Knee	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...
Wrist	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Syphilitic Disease	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Gonorrhœal Rheumatism	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hammer Toe	3	...	3	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Joint Disease in a Bleeder	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Muscles—																																			
Contraction after Typhoid	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spasmodic Contraction after Disease of Central Nervous System ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Stumps—																																			
Abscess...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sinus	3	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Ulceration	9	5	4	...	...	...	...	...	...	...	...	...	...	3	1	...	...	1	1	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
DISEASES OF BURSÆ, FASCIÆ, AND TENDONS.																																			
Simple Enlargement of Bursæ—																																			
Gluteal	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Great Toe (Bunion)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Patellar	20	5	15	...	...	...	...	...	...	...	...	...	...	1	5	...	...	1	6	...	...	2	3	...	...	1	1	...	...	...	...	...	...	...	...
Popliteal	3	3	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Trochanteric	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Inflamed and Suppurating Bursæ—																																			
Olecranon	5	3	2	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Patellar	57	11	46	...	...	...	1	...	...	...	...	...	...	3	18	...	...	1	16	...	...	3	6	...	...	...	1	...	...	2	2	...	...	2	2	...	...
Ganglia—																																			
Simple Ganglion of Wrist	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Compound Dorsal Ganglion of Wrist	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Compound Palmar Ganglion of Wrist	5	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...
Palmar Fascia Contracted	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Plantar Fascia Contracted	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Tendons—																																			
Inflammation and Suppuration of Synovial Sheaths	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Contracted Cicatrix after Burn ...	5	3	2	...	...	1	...	...	...	...	1	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
DISEASES OF THE CELLULAR TISSUE.																																			
Abscess and Inflammation	325	190	126	4	5	20	18	1	1	16	8	...	...	24	26	...	1	55	37	...	1	32	18	...	1	21	10	1	1	14	7	2	...	8	2	...	...
Œdema—*Leg*	4	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...

DISEASE.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE CUTANEOUS SYSTEM.																																			
Carbuncle	5	3	...	2	...																	1				1					1			1			
Dermatitis Exfoliativa	1	...	1	...	...																												1			
Eruption of Doubtful Nature	2	2	...	...	...	1																						1							
Eczema—																																			
Simple	4	3	1	...	...													2					1					1							
Pustular	2	2	...	...	...					1																1									
Erythema Nodosum	1	...	1	...	...														1																
Herpes Labialis	1	...	1	...	...																		1												
Lichen Planus	1	...	1	...	...														1																
Lupus	28	4	24	...	...	1								1	9				10				5			2									
Osmidrosis	1	...	1	...	...										1																				
Pityriasis Rubra	1	1	...	...	...																	1													
Psoriasis	1	...	1	...	...																					1									
Pustular Folliculitis	1	1	...	...	...																	1													
Sinuses	20	10	10	...	...									3	3			2	3			1	1			2				3	1			1	
Sycosis	1	1	...	...	...																									1					
Ingrowing Toe-Nail	37	26	11	...	...									18	6			7	5			1													
Ulcers—																																			
Chronic	18	6	12	...	...														2			2	4			3	1			3			1	2		
Inflamed	4	3	1	...	...									1								2								1					
Gangrenous	1	1	...	...	...	1																													
Perforating	6	6	...	...	...													1				1				1				1				2			
Simple	17	14	3	...	...					2				3	1							2	1			6								1	1		
Strumous	3	1	2	...	...									1	1												1								
Varicose	3	...	1	2	...																						1				2				

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F
INJURIES.																																			
Scalds	26	15	8	**1**	**2**	10	4	**1**	**1**	3	1	...	**1**	2	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Burns	45	11	18	**8**	**8**	4	5	**5**	**5**	3	2	**1**	**1**	2	3	**1**	**1**	1	3	...	...	...	2	...	...	1	...	...	**1**	...	1	...	...	2	**1**	...
Contusions—																																			
Multiple	15	8	7	...	...	1	1	...	...	1	...	...	...	4	1	...	...	1	1	...	...	1	...	...	...	...	1	...	...	...	1	...	...	2	...	...
Injuries of Head and Face—																																			
Contusions	4	3	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...
Wounds	51	39	10	**2**	...	5	1	...	...	2	...	**1**	...	11	2	...	...	5	1	...	...	6	2	...	...	6	2	**1**	...	2	1	...	...	2	1	...	...
Bullet Wounds	4	2	...	**2**	...	...	...	...	...	...	...	...	...	2	...	**1**	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...
Lacerated Wound of Tongue ...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scald of Glottis	3	1	2	...	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hæmorrhage after Tooth Extraction	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Concussion of Brain	76	63	13	...	...	6	3	...	...	9	4	...	...	20	2	...	...	8	2	...	...	8	2	...	...	6	...	...	...	4	...	...	...	2	...	...	...
Laceration of Brain	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...
Traumatic Cephal-Hydrocele ...	2	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fractures—																																			
Vertex of Skull—																																			
Simple	6	4	1	**1**	...	...	...	...	...	1	1	...	...	2	...	...	...	...	...	**1**	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Compound	6	2	...	**4**	...	...	...	...	...	1	...	**1**	...	...	...	...	...	1	...	**1**	...	...	...	**1**	...	...	...	...	...	...	...	**1**	...	...	...	...
Base of Skull	15	4	...	**7**	**4**	...	...	...	**2**	...	...	**1**	...	...	...	**1**	...	1	...	...	...	1	...	**2**	...	2	...	...	**1**	...	...	**1**	...	...	**2**	**1**
Malar Bone...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maxilla Inferior—																																			
Simple	5	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Compound	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Injuries of the Eye—																																			
Contusions	6	5	1	...	...	1	...	...	...	1	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Wounds	22	18	4	...	...	4	...	...	...	2	...	...	...	2	3	...	...	3	...	...	...	...	...	...	...	2	1	...	...	4	...	...	...	1	...	...	...
Gunshot Wounds	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ruptured Globe	7	5	2	...	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	1	...	...	...	...	...

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
INJURIES.																																			
Injuries of the Neck—																																			
Contusions	3	2	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Strangulation of Neck	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Wounds	4	3	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1
Fracture-Dislocation of Cervical Spine...	3	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Injuries of the Back—																																			
Contusions	6	5	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...
Sprains	4	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Wounds	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Concussion of Spine	5	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Fracture of Spine	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Fracture of Spinous Process of Dorsal Vertebræ	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Injuries of the Abdomen—																																			
Contusions	10	8	2	...	...	1	...	...	...	1	1	...	...	4	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rupture of the Intestine	2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Rupture of Mesentery	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Penetrating Wound	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Injuries of Thorax—																																			
Contusions	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wounds	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fracture of Ribs—																																			
Without Injury to Viscera ...	24	15	7	2	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	4	...	...	...	4	4	1	...	3	1	...	...	2	2	1	...
With Injury to Viscera	9	5	...	1	3	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	1	2	...	...	...	1	...	...	...	...	1	1

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
Injuries of the Pelvis and Genitals—																																			
Contusion of Vulva	3	...	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Lacerated Wounds—																																			
Scrotum	4	3	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Penis...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Anus...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Perineum	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rupture of Bladder	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Rupture of Urethra	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fractures—																																			
Innominate Bone—																																			
(Simple)—																																			
Acetabulum	2	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Acetabulum, with Dorsal Dislocation of Femur	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Ilium	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...
Pubes	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
(Compound)	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Injuries of the Upper Extremity—																																			
Wounds—																																			
Arm	7	4	2	1	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	1	...	...
Forearm	18	12	6	...	...	...	...	...	...	...	1	...	...	3	1	...	...	4	1	...	...	2	...	...	...	1	1	...	...	2	1	...	...	1	...	...
Hand	38	33	4	1	...	...	...	...	...	...	...	...	...	13	2	...	...	8	...	1	...	3	...	...	...	5	2	...	...	1	...	...	...	3	...	...
Wounds of Nerves—																																			
Recent—																																			
Median	4	3	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ulnar	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE I. (*continued*).

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Injuries of the Upper Extremity—(*continued*).																																			
Wounds of Nerves (*continued*)—																																			
Old—																																			
Median	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Ulnar	6	5	1	...	...	...	...	...	...	...	...	...	...	2	1	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Contusion of Musculo-Spinal Nerve..	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wounds of Joints—Elbow	3	3	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sprained Wrist	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Fractures—																																			
Clavicle	12	10	2	...	...	1	...	...	...	...	...	...	...	1	...	...	...	2	1	...	...	2	...	...	...	1	...	...	...	1	1	...	...	2	...	...	...
Scapula (Comminuted)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Humerus—																																			
(Simple)	10	5	4	1	...	1	2	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	2	1	...
Lower Extremity into Elbow-Joint	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Separation of Upper Epiphysis	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(Compound)—																																			
Shaft	4	3	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...
Lower Extremity	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Radius and Ulna—																																			
(Simple)	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(Compound)	2	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Radius—																																			
(Colles' Fracture)	3	2	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
Injuries of the Upper Extremity—(*continued*).																																			
Fractures (*continued*)—																																			
Ulna—																																			
(Simple)—																																			
Olecranon Process	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Shaft	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
(Compound)—																																			
Shaft	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Metacarpal Bone—																																			
(Simple)	3	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
(Compound)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Old Fractures with Bad Union—																																			
Humerus	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Radius and Ulna	2	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Radius (Colles')...	3	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...
Ununited Fractures—																																			
Humerus	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Dislocations—																																			
Clavicle (Sternal End)	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elbow—																																			
(Simple)	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(Compound)	4	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...
Thumb (Compound)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wrist (Compound)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Injuries of the Upper Extremity—(*continued*).																																			
Old Unreduced Dislocations—																																			
Elbow	1	1	...	...	...																							1							
Finger	3	3	...	...	...					1				2																					
Shoulder	10	8	2	...	...					1								1				1	1			3				2				1		
Thumb	1	1	...	...	...													1																		
Injuries of the Lower Extremity—																																			
Contusions	22	12	10	...	...	1	2				1			2				2	1			3	3			1				2				3	1		
Wounds—																																			
Thigh	11	11	...	...	...									6				2				1				1								1			
Leg	18	14	3	1	...	1	...	1	...	2				4	1			4				2				...	1			1	1					
Foot	13	12	...	1	...									5				2		1		2				3										
Needle in Foot	2	...	2	...	...										2																					
Wounds of Joints (Knee)	6	5	1	...	...					1				2				1	1			1														
Ligamentum Patellæ Ruptured	2	2	...	...	...																	1				1										
Sprains—																																			
Hip	1	1	...	...	...									1																						
Ankle	3	1	2	...	...									1	1																1					
Fractures—																																			
Femur—																																			
(Simple)—																																			
Intracapsular	12	5	7	...	...																					1				1				4	6		
Extracapsular	4	2	1	1	...																					1								1	1	1	
Shaft	55	42	13	...	...	9	6			5	1			12	2			3				3				2				2	1			6	3		
Lower End into Knee-Joint	3	3	...	...	...																	1				2										
Greenstick Fracture	1	1	...	...	...	1																													

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.
Injuries of the Lower Extremity—(*continued*).																																			
Fractures (*continued*)—																																			
Femur (*continued*)—																																			
(Compound)—																																			
Shaft	4	2	...	**2**	...	...	...	...	...	...	...	...	...	1	...	...	...	...	**1**	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...
Lower Extremity into Knee-Joint	3	1	...	**1**	**1**	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	**1**
Patella—																																			
(Simple)—																																			
Transverse	29	16	13	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2	1	...	...	6	5	...	...	3	5	...	...	1	2	...	...	2	...	...	...
Starred	4	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	2	...	...	...
(Compound)	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...
Tibia and Fibula—																																			
(Simple)	77	49	27	**1**	...	...	...	...	...	1	...	...	...	5	1	...	...	5	2	...	...	15	7	...	...	13	3	...	...	7	8	...	...	3	5	**1**	...
(Compound)—																																			
Shaft	23	17	4	**2**	...	...	...	...	...	...	...	...	...	1	...	...	...	4	...	...	...	6	1	...	...	4	1	...	...	2	2	**1**	...	...	**1**	...	...
Lower Extremities into Ankle-Joint	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Tibia—																																			
(Simple)—																																			
Shaft	49	37	12	...	...	4	2	...	...	8	2	...	...	9	3	...	...	...	7	...	...	5	4	...	...	1	1	...	...	2	...	...	...	1	...	...	...
Upper Extremity into Knee-Joint	2	...	...	**1**	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	**1**
Separation of Lower Epiphysis of Tibia	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(Compound)—																																			
Shaft	4	4	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lower Extremity into Ankle-Joint	1	...	...	**1**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...	...	...

INJURY.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
		M.	F.	M.	F.	Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
						M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Injuries of the Lower Extremity—(*continued*).																																			
Fractures (*continued*)—																																			
Fibula—																																			
(Simple)	51	45	6	...	...	...	...	...	...	3	1	...	...	6	...	...	...	11	...	...	...	10	2	...	...	5	1	...	...	5	2	...	...	5	...	...	...
Pott's Fracture—																																			
(Simple)	38	30	8	...	...	...	...	...	...	...	...	...	...	1	...	...	...	7	1	...	...	8	2	...	...	5	4	...	...	7	...	...	...	2	1	...	...
Metatarsal Bones—																																			
(Simple)	3	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Os Calcis—																																			
(Simple)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Toe—																																			
(Simple)	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Old Fractures with Bad Union—																																			
Femur	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Tibia and Fibula	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Tibia	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pott's	4	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Patella	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Ununited Fractures—																																			
Femur	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Dislocations—																																			
Knee (Outwards)	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Patella	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Toe	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diseases and Injuries Unclassified ...	78	54	24	...	...	4	5	...	...	8	4	...	...	11	5	...	...	5	5	...	...	9	1	...	...	8	1	...	...	7	...	...	...	2	3	...	...

ABSTRACT OF TABLE I.,

With Average Duration of Surgical Patients in the Hospital.

Discharged, Cured or Relieved	M. — 2,607 F. — 1,474
Died	M. — 161 F. — 83
Remaining in at the end of year 1885*	M. — 200 F. — 111
Average stay of Men	25·03 days.
„ Women	28·27 „

Average stay in Hospital of all Surgical Patients — 26·13 days.

* These cases are not included in Table I.

APPENDIX TO TABLE I.

GENERAL DISEASES.

Anæsthetic Leprosy.

This was the case of a man, aged 48, who had patches of anæsthetic skin on the legs, thighs, and upper extremities, together with a very typical "leonine" countenance. He discharged himself after being in the hospital one day. He was a sailor, and had traded chiefly in the North Sea.

Tetanus.

A man, aged 48, was admitted with chronic ulcers on the leg and severe tetanus. He died the day after admission. A post-mortem examination showed no disease of the nerves or spinal cord. In the cerebellum was a small glioma, as large as a hazel-nut. The other viscera were natural.

Gangrene.

Of the seven cases of senile gangrene of the lower extremity, three died—two women and one man. In none of these was any operation performed. Of the four who recovered, amputation of the leg in the lower third was performed in one case. This patient was a man of 65, whose foot was gangrenous, and whose urine contained a considerable quantity of sugar. The stump healed fairly well, but before his discharge a small slough formed on the heel of the other foot. This caused no serious complication, and before he left the hospital his urine no longer contained any sugar.

Of the cases of gangrene from exposure to cold, in one the toes were affected, in the other the ears.

One patient died after amputation of the thigh for gangrene due to embolism of the popliteal artery, and another man died from plugging of the common femoral. A woman died after amputation at the lower third of the thigh for gangrene due to plugging of the popliteal. In all these cases there was advanced heart disease.

A man, aged 47, died after amputation of the leg in its lower third for moist gangrene, complicating diabetes. The gangrene spread up the thigh before death. No post-mortem examination was permitted.

A boy, aged 14, was admitted with gangrene of the hand, the result of acute inflammation following a severe contusion. A free exit to the retained pus arrested the gangrene, but for several months the patient was in a most critical condition, suffering from chronic pyæmia, with multiple abscesses and suppurating joints. He ultimately recovered.

Of three cases of idiopathic gangrene of the scrotum, two died. No cause for the gangrene could be discovered.

SYPHILIS.

A woman, aged 25, who had contracted syphilis about 6 years previously, died with necrosis of the skull and meningitis.

TUMOURS.

A man, aged 55, died from a sarcomatous growth of the bladder which obstructed the flow of urine and necessitated supra-pubic puncture. The tumour was composed of oval and spindle cells.

Of nine cases of sarcoma of the breast occurring in women, in six the growth was partly fibrous and myxomatous; in one it was composed of round and oval cells. In all of these there were cysts in the breast. In two cases there were no cysts. In one of these the tumour was a simple round-celled sarcoma, with considerable-sized secondary growths in the axillary glands. The patient was aged 29. In the other case the patient was a woman aged 47; the growth was a fungating one, and was of an unusual appearance. It consisted of a stroma of round and oval cells of a sarcomatous nature, some of them as large and as multinucleated as the cells of a myeloid sarcoma; embedded amongst these were masses of epithelial cells such as are commonly seen in carcinomatous tumours in this situation.

In a case of sarcoma of the epididymis, the patient was admitted with a gangrenous condition of the scrotum. The growth was not discovered till the sloughing ceased.

The case of sarcoma of the forearm which proved fatal was one in which a "parosteal" growth was originally locally removed about 2 years previously. The patient died with numerous secondary growths.

A man, aged 39, was admitted with a pulsating tumour of the thigh in the lower third. It occupied the popliteal space, and extended over the lower part of the femur on its inner and outer sides. It could in part be emptied by pressure combined with arrest of pulsation in the femoral. It was doubtful whether the tumour was a sarcoma of the femur or an aneurysm, but the general opinion was in favour of the former. The patient refused operative interference.

DISEASES OF THE NERVOUS SYSTEM.

Neuralgia.

A man, aged 53, was admitted into the hospital suffering from pains of a neuralgic nature in the arm and neck. The brachial plexus was stretched, but without any material benefit. A similar result followed stretching of the inferior dental nerve for facial neuralgia.

A man, aged 23, was admitted with severe neuralgic pains in the finger, following a blow received more than a year previously. Stretching of the digital nerves procured immediate and permanent relief.

In two cases the sciatic nerve was stretched by the bloodless method, with relief to the symptoms.

In a case of neuralgia of a stump, stretching of the divided median, ulnar, and musculo-spiral nerves was performed on three occasions at intervals of four months, and each time the operation gave temporary relief.

The two cases, that one classed under the head of "Neuritis," are of a rather anomalous nature.

A man of 67 had suffered from extreme pains and numbness of the distal half of the little finger for several weeks. The finger was abnormally cold, and the skin was shiny. He could only obtain relief by keeping it wrapped in cotton wool; warmth of any kind was soothing. Galvanism gave no relief, and on his discharge the patient was not improved.

A man of 39, who had been out of work and suffered from insufficient food, began to suffer pain in the ring and little fingers of the right hand, and on the inner side of the left hand, on January 11th. On January 12th he lost feeling in these situations, and also slightly in the index and middle fingers of the right hand, and in the second and third toes of the left foot. On January 11th the right ring finger began to get black, and on the 12th the right

little finger followed suit. On admission there was found to be anæsthesia of those parts of the hands supplied by the ulnar nerves, with great impairment of sensation in the parts supplied by the median and radial nerves. The skin was of a dusky colour, and on the right ring and little fingers, as well as on the ulnar edge of the left hand, there were patches of gangrene. Electrically examined, the reactions of the palmar muscles were feeble, but otherwise natural. Under a liberal diet and tonic treatment improvement was rapid, and only a very little of the apparently gangrenous skin ultimately sloughed. In neither of the above-mentioned cases were there any evidence of any constitutional disease.

Trephining for Epilepsy.

The patient was a man of 40, who had fallen on his head 6 months previously, and received a severe scalp wound. Soon after the injury he had several epileptiform fits, and these continued until his admission into the hospital. An examination showed a tender and painful scar on the right parietal eminence, with impairment of power in the left hand. The bone was exposed at the seat of original injury, and a portion of it was removed with a trephine. It appeared to be quite healthy. The patient made a good recovery and had no further fits whilst under notice.

DISEASES OF THE VASCULAR SYSTEM.

Rupture of Aneurysm of External Iliac.

This was the case of a man, aged 35, who had noticed a swelling in the right groin for 5 weeks. He had strained himself by falling off a stool 3 months before admission, and 5 years previously had suffered from syphilis. He was an intemperate man. An examination revealed an aneurysmal swelling extending over the whole of the course of the right external iliac artery. The patient was placed on a low diet, with increasing doses of iodide of potassium, and the limb was bandaged. Five weeks after admission, whilst the patient was straining to pass a motion, the aneurysm became suddenly diffused, and he sank and died in a few hours. A post-mortem examination showed a sacculated aneurysm, which had ruptured into the subperitoneal tissue in the iliac fossa and loin.

An old man of 79 was admitted with a fusiform aneurysm of the external iliac and common femoral vessels. The aneurysm had been in existence for 14 years, and he had been on previous occasions an inmate of the hospital. There was no material alteration in the tumour since the time he was last seen 3 years previously, so no treatment was adopted.

A man, aged 50, was admitted with a popliteal aneurysm. Pressure was tried, but failed to promote a cure, and the patient refused further interference.

A patient, aged 50, was admitted on July 11th suffering from numbness of the right hand and forearm, with feeble pulsation in the arteries of the right upper extremity, and a swelling in the right subclavian triangle. The case was thought to be one of arteritis obliterans. During his stay in the hospital the finger joints became stiff and painful, the muscles of the hand atrophied, and blebs appeared on the back of the hand. The pulsation in the arteries was very feeble, and the subclavian appeared to be dilated. The patient suffered much pain, but finally recovered, with a good deal of stiffening of the hand and fingers.

(For cases of aneurysms and varicose veins treated by operation, *see* Appendix to Table II.)

DISEASES OF THE LYMPHATIC SYSTEM.

Elephantiasis.

This was a case of true elephantiasis occurring in a healthy girl of 28, and implicating the whole leg up to the knee-joint. The patient had never been abroad, and had noticed the swelling for 3½ years. After amputation, the limb showed no other change than a great increase of thickness of the subcutaneous tissue and skin.

DISEASES OF THE DIGESTIVE SYSTEM.

A woman of 52 died from bronchitis a week after admission into hospital for an inflamed umbilical hernia. The latter was not troublesome at any time. (For cases of hernia treated by operation, as well as for abdominal section, &c., *see* Appendix to Table II.)

Rectum.

One case of fistula in ano died with tuberculosis and disease of the kidneys.

A child, aged 7 months, died with symptoms of peritonitis following sloughing of a prolapse of the mucous membrane of the bowel.

(For cases submitted to operation, *see* Appendix to Table II.)

DISEASES OF THE GENITO-URINARY ORGANS.

Of the three deaths from calculus in the bladder, one only was operated upon. In one of the others, the patient had three times previously had operations performed for the removal of calculi, and had also had his prostate removed. (*See* Appendix to Table I. of Surgical Report for 1884, page 79.) One patient died with advanced disease of the urinary organs following the formation of a calculus several years previously; he was in a dying state when admitted.

DISEASES OF THE ORGANS OF LOCOMOTION.

Abscess of the Scapula.

This was a case of chronic periosteal abscess simulating a tumour, and treated by removal of the portion of bone on which the swelling was situated.

Necrosis of the Coccyx.

The patient was a young woman of 24, who miscarried at the seventh month after an attack of rheumatic fever. She died of pyæmia.

Acute Periostitis.

In two cases affecting the femur, recovery followed amputation of the thigh. One patient was pyæmic at the time of operation. In one case, in which the primary lesion was in the os calcis, Roux's amputation was performed, and in another similar case necrosis of the femur and suppuration in the knee-joint of pyæmic origin ensued. Amputation of the thigh was followed by recovery.

Osteo-Arthritis of Shoulder.

This was the case of a man, aged 25, who had typical osteo-arthritis of the left shoulder, but combined with profuse suppuration. He died from advanced disease of the kidneys of long standing.

Acute Suppurative Arthritis.

In the three cases mentioned in the table, the suppuration was the result of contusions, without any open wound. In one case the hip, in one the knee, and in one the wrist, was affected. Excision of the necrosed head of the femur was performed in the first, but the patient died. In the case of the knee, ankylosis ensued. Amputation of the forearm was performed in the third case, which was further complicated by ulceration extending into the radial artery, and severe hæmorrhage.

Synovial Cysts.

One was in connection with an elbow joint, which was apparently not much diseased. Three others occurred in the calf—one was in connection with destructive disease of the knee; in the other two the joint was comparatively healthy. In one case, that of a woman, aged 28, both wrists presented synovial swelling on the dorsal and palmar surfaces. The movements of the articulations were much impaired.

Syphilitic Disease of Joints.

A lad, aged 19, suffered from localised swelling of the synovial membrane of the knee, together with a typical syphilitic rash, sore throat, and enlarged

testis. All these troubles subsided, as did also the knee, under mercurial treatment.

A man of 30, who had a soft node on his forehead, and a history of syphilis, suffered from periosteal swelling of the articular ends of the femora, first metatarsal bones, and tibia on one side. Under treatment by iodide of potassium the joints rapidly improved.

INJURIES.

Wounds of the Head and Face.

A child, aged 5, died from tetanus on the eleventh day after a contused wound of the scalp. A man of 42 died of heart disease and syncope after a contused wound of the head.

Bullet Wounds.

A lad of 18 recovered, with loss of vision in one eye, after a suicidal wound. The bullet had entered the middle of the forehead, and passed backwards and to the left. There was some loss of cerebral substance. The bullet was not found. The patient died in Guy's Hospital six months later. See *Lancet*, May 22nd, 1886.

Fractures of Upper Extremity.

A man, aged 72, died of heart disease 9 days after admission for a simple fracture of the humerus.

A man of 60 died from profuse suppuration and sloughing following separation of the arm at the shoulder-joint, caused by a railway accident.

Injuries of Lower Extremity.

A boy of 4 died, on the fifth day after a lacerated wound of the leg, from tetanus.

A man of 24 died on the twelfth day, from the same disease, after a similar injury to the foot. Amputation of the leg was performed as soon as symptoms commenced.

Of six cases of punctured wounds of the knee-joint, suppurative arthritis occurred in five. In two of these amputation of the thigh was performed. All the patients recovered.

A man, aged 44, died after a compound fracture of the patella, with uræmic symptoms and delirium. He had a very tight stricture of the urethra, and advanced disease of the kidneys.

A man of 60 died with suppurating kidneys, and an enlarged prostate, 22 days after a simple fracture of the tibia and fibula.

A man of 64 died on the thirty-seventh day after a compound fracture of the tibia and fibula, for which primary amputation of the leg in the upper third had been performed. Death was apparently due to broncho-pneumonia and asthenia.

A man of 52 died 30 days after compound fracture of the bones of both legs, having been in a state of low muttering delirium from the first day after the injury.

A woman of 75 died of exhaustion 33 days after a simple fracture of the tibia into the knee-joint.

A man of 37 died with diffuse cellulitis of the leg and thigh a week after a simple fracture of the tibia into the knee-joint. A post-mortem examination showed no visceral disease.

TABLE II.

SURGICAL OPERATIONS PERFORMED.

OPERATIONS.	AGE AND SEX.																					
	TOTAL.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON THE EYE.																								
Tenotomy for Squint ...	18	16	18	16	...	...	2	2	9	3	5	9	1	1	1	...	...	1	...	...	...	...	...	...
Iridectomy	14	10	14	10	...	...	1	...	2	1	2	2	1	1	2	1	1	1	3	2	2	2	...	...
Iridotomy	2	1	2	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...
Cataract—																								
Extraction	40	17	40	17	...	...	...	2	1	...	1	...	3	...	2	...	1	3	5	5	27	7	...	...
Needle Operation ...	15	7	15	7	...	...	4	1	2	1	2	2	...	1	3	...	2	...	1	...	1	2	...	...
Needle Operation on Opaque Capsule	6	2	6	2	...	...	...	...	1	...	1	...	...	...	2	...	1	...	1	2	...	...	...	...
Abscision	1	3	1	3	...	...	1	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	...
Extirpation of Globe ...	11	4	11	4	...	...	...	...	1	...	2	2	3	...	2	...	1	...	...	1	2	1	...	...
Ectropion	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Slitting the Canaliculus ...	3	2	3	2	...	...	...	...	...	1	1	1	1	...	1	...	...	...	...	...	...	...	...	...
Sclerotomy	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Pterygium Transplanted ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Tarsal Tumours Removed...	1	3	1	3	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	1	...	...	...
Transplantation of Eyelashes	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Plastic Operations for Lachrymal Fistula	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...

OPERATIONS	AGE AND SEX.																					
	TOTAL.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
PLASTIC OPERATIONS.																								
Contracted Cicatrix ...	2	1	2	1	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
For Cleft Palate	7	12	7	12	...	...	2	1	2	3	3	7	...	...	...	1	...	...	...	...	...	...	...	...
„ Hare-Lip	16	6	16	6	...	...	15	6	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
„ Dilated Urethra ...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
„ Ectopia Vesicæ ...	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
„ Recto-Vaginal Fistula..	...	2	...	2	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...
„ Vesico-Vaginal Fistula.	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...
„ Ruptured Perineum ...	...	7	...	7	...	...	...	...	...	...	...	1	...	3	...	1	...	1	...	...	...	1	...	...
„ Webbed Fingers and Toes	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
EXCISION OF BONES AND JOINTS.																								
Astragalus	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elbow	4	...	4	...	...	...	...	...	...	...	1	...	1	...	1	...	1	...	...	...	...	...	...	...
Hip	2	2	1	...	1	2	...	2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Knee	5	...	5	...	...	...	...	...	2	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...
Phalangeal Joint	2	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Scapula, Part of	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Maxilla Superior	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Wrist...	...	2	...	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Tarsal Arch	1	1	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
OPERATIONS ON BONES.																								
Osteotomy—																								
Genu Valgum	18	5	18	5	...	...	6	3	6	...	6	2	...	...	...	...	...	...	...	...	...	...	...	...
Genu Varum	3	...	3	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Operations on Bones (*continued*).																								
Osteotomy (*continued*)—																								
Rachitic Curvature (*Tibiæ*)	4	5	4	5	...	...	2	1	2	1	...	3	...	...	...	...	...	...	...	...	...	...	...	...
Badly United Fracture of Femur	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Badly United Pott's Fracture	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Anchylosis of Hip ...	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Talipes (*Tarsal Arch*) ...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elevation of Depressed Fracture of Skull	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Gouging of Carious Bone ...	6	1	6	1	...	...	...	...	1	...	2	...	...	1	1	...	1	...	1	...	...	...	...	...
Linear Osteotomy—																								
Chronic Periostitis (*of Tibia*)	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Perforation of Mastoid ...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Removal of Sequestra—																								
Femur	2	1	2	1	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...
Humerus	2	...	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Maxilla	2	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Metatarsus	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Phalanges...	3	...	3	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1	...	...
Radius	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Rib	...	3	...	3	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Tibia	5	7	5	7	...	...	...	1	1	1	1	1	1	2	1	...	...	2	...	...	1	...	...	...

TABLE II. (*continued*).

OPERATIONS.	AGE AND SEX.																							
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON BONES (*cont.*)																								
Trephining—																								
Mastoid (*Necrosis*) ...	1	2	...	1	...	1	...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Skull (*Epilepsy*) ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Humerus (*Chronic Periostitis*)	1	1	1	1	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Refracture of Badly-united Fractures	3	...	3	...	...	...	...	...	1	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
OPERATIONS ON JOINTS.																								
Joints Incised and Drained (*Ankle*)	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Removal of Loose Bodies from Knee	3	1	3	1	...	...	...	...	...	...	1	...	...	...	1	1	1	...	...	...	...	...	...	...
AMPUTATIONS.																								
Primary—																								
Arm—																								
(*Middle Third*) ...	3	...	3	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...
(*Upper Third*) ...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Forearm—																								
(*Upper Third*) ...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Part of Hand	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Digits	10	1	10	1	...	...	...	...	...	...	6	1	2	...	2	...	...	...	...	...	...	...	...	...
Leg—																								
(*Middle Third*) ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
(*Upper Third*) ...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
(*Lower Third*) ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	Total.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
AMPUTATIONS (*continued*).																								
Primary (continued)—																								
Thigh—																								
(*Middle Third*) ...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
(*Upper Third*) ...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Toes	3	...	3	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...
Secondary—																								
Forearm—																								
(*Lower Third*) ...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
(*Middle Third*) ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Digits	3	...	2	...	1	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...
Leg—																								
(*Upper Third*) ...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
(*Middle Third*) ...	2	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Thigh—																								
(*Lower Third*) ...	3	1	3	1	...	...	...	...	...	...	1	...	...	...	1	...	1	...	...	1	...	...	...	...
(*Middle Third*) ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Toe	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
For Disease—																								
Ankle-Joint (*Syme's*) ...	5	2	5	2	...	...	...	...	...	1	2	...	1	1	1	...	...	...	1	...	...	...	...	...
Ankle (*Roux's*)	1	3	1	3	...	...	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	...	...	...
Arm	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Chopart's	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Digits	14	2	14	2	...	...	...	...	1	...	2	...	1	1	1	...	3	...	2	1	4	...	...	...
Forearm	2	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...
Hip	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Knee-Joint	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	Total.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
AMPUTATIONS (*continued*).																								
For Disease (continued)—																								
Leg—																								
(*Lower Third*) ...	3	1	2	...	1	1	...	...	...	...	...	...	...	...	...	1	2	...	...	...	1	...	...	...
Shoulder	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Thigh—																								
(*a*) (*Lower Third*) ...	8	7	8	6	...	1	...	...	...	2	2	1	3	1	2	1	1	1	...	1	...	...	...	...
(*b*) (*Middle Third*) ...	1	3	...	3	1	...	...	...	...	...	...	3	...	...	...	...	...	...	1	...	...	...	...	...
(*c*) (*Upper Third*) ...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Toe	...	2	...	2	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...
Penis	6	...	6	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	3	...	...	...
Re-amputations—																								
(*a*) Arm	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
(*b*) Leg...	2	...	2	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
BREAST: AMPUTATIONS—																								
Carcinoma	...	19	...	18	...	1	...	...	...	...	...	...	...	...	...	3	...	7	...	5	...	3	...	1
Cystic Tumours	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	2	...	1	...	1	...	...	...	...
Amputation with Removal of Axillary Glands—																								
(*a*) For Carcinoma ...	...	19	...	18	...	1	...	...	...	...	...	...	...	...	...	3	...	8	...	5	...	3	...	...
(*b*) For Sarcoma ...	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
REMOVAL OF TUMOURS.																								
Adenoid Growth of Nose ...	2	...	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Dermoid Cysts	4	3	4	3	...	...	2	1	1	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Sebaceous Cysts	10	7	10	7	...	...	...	...	...	1	3	...	1	4	1	1	2	1	3	...	...	...	...	...
Cysts of Breast	...	4	...	4	...	...	...	...	...	...	...	1	...	...	...	...	...	3	...	...	...	...	...	...
Enchondroma	1	2	1	2	...	...	...	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
REMOVAL OF TUMOURS(*cont.*)																								
Exostosis and Osteoma ...	2	9	2	9	...	...	...	...	...	...	1	8	...	1	...	...	1	...	...	...	...	...	...	...
Fibroma	4	6	4	6	...	...	...	1	...	...	1	1	2	1	1	2	...	1	...	...	...	...	...	...
Fibro-Adenoma of Breast ...	...	12	...	12	...	...	...	...	...	...	...	2	...	5	...	3	...	2	...	...	...	...	...	...
Lipoma	6	15	6	15	...	...	...	...	...	...	1	1	1	4	...	5	1	3	2	2	1	...	...	...
Moles	...	3	...	3	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...
Myxoma	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nævus	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Papilloma	...	3	...	3	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...
Polypus	9	8	9	8	...	...	...	1	1	1	2	2	2	3	1	...	2	1	1	...	...	...	...	...
Carcinoma—																								
Breast (*Local Removal*)..	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	3	...	1	...	...	...	...	...	...
Breast and Axillary Glands (*Recurrent*) ...	...	10	...	10	...	...	...	...	...	...	...	...	...	...	...	2	...	6	...	1	...	1	...	...
Skin of Thorax	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Rectum	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Epithelioma—																								
Cheek	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...
Hand	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Forehead	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Lip	5	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	...	1	...
Nostril	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Scrotum	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Vulva	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...
Recurrent in Inguinal Glands	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Recurrent in Cervical Glands	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Rodent Ulcer (*Face*) ...	8	3	8	3	...	...	...	...	...	...	...	...	...	...	...	...	2	...	3	...	1	2	2	1

OPERATIONS.	AGE AND SEX.																							
	TOTAL.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
REMOVAL OF TUMOURS(*cont.*)																								
Round-celled Sarcoma—																								
Axilla	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Buttock	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Clavicle	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Forearm	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Groin	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Neck	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Nerves of Brachial Plexus	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Shoulder	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Thigh	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Superior Maxilla ...	2	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...
Spindle-celled Sarcoma—																								
Abdominal Wall	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Breast	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Neck	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Myeloid Sarcoma—																								
Naso-Orbital Region ...	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Melanotic Sarcoma—																								
Face	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Chondro-Sarcoma—																								
Parotid	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	1	...	...	...	...
Fibro-Sarcoma—																								
Buttock	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Parotid	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Thigh	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	TOTAL.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
REMOVAL OF TUMOURS (*cont*).																								
Myxo-Sarcoma—																								
Parotid	1	3	1	3	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	1	...	...	...	...
Cystic Sarcoma—																								
Breast	...	3	...	3	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	...	...	...	...
OPERATIONS ON THE TONGUE.																								
Excision of Whole Tongue..	5	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	2	...	...	...
Excision of One Lateral Half of Tongue	5	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	...	2	...	...	...
Excision of Anterior Half of Tongue...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	...	...	...
Local Removal of Epithelioma of Tongue ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Removal of Syphilitic Ulcer of Tongue...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Removal of Recurrent Epithelioma of Tongue ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Removal of Epithelioma of Floor of Mouth	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...
Division of Gustatory Nerve	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
OPERATIONS ON BURSÆ, FASCIÆ, AND TENDONS.																								
Bursa Patellæ removed ...	4	3	4	3	...	...	...	...	...	...	1	1	1	2	1	...	1	...	...	...	...	...	...	...
Loose Bodies in Trochanteric Bursa removed ...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	TOTAL.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON BURSÆ, &C. (*continued*).																								
Incision of Compound Palmar Ganglion	3	1	3	1	...	...	...	...	...	...	...	...	...	1	...	...	2	...	1	...	...	...	...	...
Removal of Compound Palmar Ganglion	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Removal of Compound Dorsal Ganglion	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Removal of Simple Ganglion of Wrist	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Division of Contracted Palmar Fascia	1	1	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Tenotomy—																								
For Talipes	8	4	8	4	...	...	3	...	2	2	2	2	1	...	...	...	...	...	...	...	...	...	...	...
„ Wry Neck	3	2	3	2	...	...	...	1	1	...	2	...	...	1	...	...	...	...	...	...	...	...	...	...
Resection of Tendo-Achillis	...	2	...	2	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
OPERATIONS ON NOSE.																								
Posterior Nares Plugged ...	2	1	2	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	...	...
Rhinoplastic Operation ...	1	1	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
Rouge's Operation	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Deviated Septum Straightened	7	7	7	7	...	...	...	2	...	2	4	...	2	2	...	1	1	...	...	...	...	...	...	...
Turbinate Bones Removed..	...	2	...	2	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...
OPERATIONS ON NERVES.																								
Nerve-Stretching—																								
Brachial Plexus	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Digital Nerve	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...

TABLE II. (*continued*).

OPERATIONS.	AGE AND SEX.																					
	TOTAL.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON NERVES (*continued.*)																						
Nerve-Stretching (*contd.*)—																						
Inferior Dental	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Nerves of Stump of Arm.	3	...	3	...	...	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...
Sciatic (*Bloodless Method*)	2	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Primary Suture of Nerves—																								
Median	1	1	1	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...
Ulnar	3	...	3	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...
Secondary Suture of Nerves																								
Median	1	2	1	2	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	...	...	...	...
Ulnar	2	1	2	1	...	...	...	...	...	...	...	1	...	...	1	...	1	...	...	...	...	...	...	...
Exploratory Operation on Contused Nerve	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
OPERATIONS ON VASCULAR SYSTEM.																								
Ligature of Arteries—																								
Superficial Femoral (*For Aneurysm*)	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Common Iliac (*For Aneurysm*)	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Superficial Femoral Artery and Vein in Hunter's Canal (*For Wound*)	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Popliteal (*For Recurrent Aneurysmal Pulsation*)	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Superficial Femoral and Brachial (*For Embolic Aneurysms*)	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	TOTAL.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON VASCULAR SYSTEM (*continued*).																								
Galvano-Puncture of Subclavian Aneurysm ...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Operations on Varicose Veins—																								
Ligature	1	3	1	3	...	...	...	...	...	...	...	...	...	2	1	1	...	...	...	...	...	...	...	...
Removal	6	1	6	1	...	...	...	...	...	...	3	...	3	1	...	...	...	...	...	...	...	...	...	...
Acupressure	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
OPERATIONS ON GENITO-URINARY ORGANS.																								
Nephrotomy	1	4	1	2	...	2	...	...	...	...	...	...	...	...	1	...	...	3	...	1	...	...	...	...
Nephro-Lithotomy	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Nephrectomy	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Electrolysis for Enlarged Prostate	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Electrolysis for Strictured Urethra	4	...	4	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	1	...	...	...
Urethrotomy—																								
External	10	...	7	...	3	...	...	...	...	...	...	...	1	...	5	...	1	...	2	...	1	...	...	...
Internal	3	...	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...
Lithotomy—																								
Lateral	4	...	3	...	1	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...
Median	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Lithotrity (*At a Single Sitting*)	3	...	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...
Supra-Pubic Puncture of Bladder	5	...	3	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...	2	...	...	...	1	...

OPERATIONS.	AGE AND SEX.																					
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON GENITO-URINARY ORGANS (*contd.*)																								
Removal of Prolapse of Urethra	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Hydrocele Injected with Iodine	12	...	12	...	...	...	...	...	1	...	3	...	1	...	5	...	1	...	1	...	...	...	...	...
Seton passed through Hydrocele	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sac of Hydrocele Excised...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Ligature of Varicocele ...	4	...	4	...	...	...	...	...	...	...	3	...	1	...	...	...	...	...	...	...	...	...	...	...
Lee's Operation for Varicocele	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Median Cystotomy... ...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Castration—																								
For Strumous Testes ...	4	...	4	...	...	...	...	...	...	...	1	...	2	...	1	...	...	...	...	...	...	...	...	...
For Hæmatocele... ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
For Sarcoma of Epididymis	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Circumcision—																								
For Congenital Phimosis.	60	...	60	...	...	...	25	...	10	...	21	...	2	...	2	...	...	...	...	...	...	...	...	...
RECTAL OPERATIONS.																								
Anal Fissure Incised ...	9	3	9	3	...	...	...	...	...	...	...	1	2	...	1	...	3	2	3	...	...	...	...	...
Anal Fistula Incised ...	27	6	27	6	...	...	3	...	...	...	1	...	5	4	10	1	6	1	1	...	1	...	...	...
Contracted Anus Incised ...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Excision of Rectum ...	2	4	2	4	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	2	1	...	...

TABLE II. (*continued*).

OPERATIONS.	AGE AND SEX.																							
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
RECTAL OPERATIONS (*cont.*).																								
Hæmorrhoids Ligatured ...	21	6	21	5	...	1	...	...	...	...	2	...	5	2	8	2	3	...	1	2	2	...	...	...
Hæmorrhoids Clamped ...	3	1	3	1	...	...	...	...	...	...	...	...	...	...	1	1	1	...	1	...	...	...	...	...
Hæmorrhoids Cauterised ...	4	1	4	1	...	...	...	...	...	...	...	...	1	...	...	...	2	...	1	1	...	...	...	...
Linear Proctotomy... ...	2	2	2	1	...	1	1	...	...	...	1	...	...	1	...	1	...	...	...	...	...	...	...	...
Prolapse of Rectum Cauterised	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Prolapse of Rectum Ligatured	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
MISCELLANEOUS OPERATIONS																								
Operations on Enlarged Glands—																								
Cauterised	2	3	2	3	...	...	...	...	...	...	1	1	1	2	...	...	...	...	...	...	...	...	...	...
Removed	5	3	5	3	...	...	...	...	...	...	2	1	3	1	...	1	...	...	...	...	...	...	...	...
Erased	5	1	5	1	...	...	...	...	...	...	1	1	2	...	1	...	...	...	1	...	...	...	...	...
Erasion of Lupus	3	21	3	21	...	...	1	...	...	...	...	8	...	10	...	3	2	...	...	...	...	...	...	...
Ingrowing Toe Nails Removed	26	10	26	10	...	...	...	...	...	...	18	5	7	5	1	...	...	...	...	...	...	...	...	...
Spina Bifida Injected with Morton's Fluid	1	1	1	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enlarged Tonsils Removed.	3	3	3	3	...	...	1	...	1	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...
Electrolysis for Nævus ...	2	3	2	3	...	...	1	3	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Thyroid Cyst Injected with Iodine	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Removal of Vermiform Appendix	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...

OPERATIONS.	AGE AND SEX.																					
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON HERNIÆ.																								
Herniotomy (For Relief of Strangulation)—																								
Femoral—																								
Sac Opened	1	20	...	14	1	6	...	...	...	...	...	...	...	...	...	1	...	6	...	6	1	4	...	3
Sac not Opened ...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...
Inguinal—																								
Sac Opened	11	...	10	...	1	...	...	...	...	...	...	...	2	...	2	...	4	...	3	...	...	...	...	...
Umbilical—																								
Sac Opened	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Radical Cure of Irreducible Femoral Hernia	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Radical Cure of Irreducible Inguinal Hernia	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Radical Cure of Reducible Inguinal Hernia	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Excision of Sac of Old Femoral Hernia	1	1	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
ABDOMINAL SECTION ...	8	3	2	1	6	2	1	...	1	1	3	1	...	1	2	...	...	...	1	...	...	...	...	...
COLOTOMY	5	5	3	3	2	2	...	...	...	...	...	...	...	...	1	2	...	1	3	1	1	1	...	...
TRACHEOTOMY	17	7	4	2	13	5	11	5	2	...	...	...	1	...	...	1	1	1	2	...	...	...	...	...
OVARIOTOMY	...	9	...	7	...	2	...	...	...	...	...	...	...	2	...	3	...	2	...	1	...	...	...	...

STATISTICS OF ANÆSTHETICS.

During the year 1885 Anæsthetics were administered 3,213 times.

Chloroform was administered	1,331	times.
Nitrous Oxide Gas (alone)	378	„
Ether (alone)...	1,118	„
Ether, preceded by Nitrous Oxide Gas	386	„
	3,213	

No Death.

APPENDIX TO TABLE II.

EXCISIONS.

Of the astragalus in a case of severe talipes varus.

Of the elbow in four cases for strumous disease.

The hip was excised for advanced hip disease in three cases, two female and one male. The two former died, the latter made a good recovery. In one case the head of the femur was excised for suppurative arthritis and necrosis following contusion of the hip. The patient died. Excision of the knee was performed five times. The result in each case was satisfactory.

One of the phalangeal joints was excised twice—once for disease, once for old irreducible dislocation. In the latter case amputation was subsequently performed. A portion of the scapula was excised on account of an abscess of the bone, which, before operation, closely simulated a new growth.

Excision of the superior maxilla in a girl, aged 14, for a sarcomatous growth proved fatal from shock 26 hours after operation. A post-mortem examination showed no secondary growths. The wrist joint was twice excised for disease of the carpal bones.

A V-shaped piece of bone was removed from the tarsal arch in two cases for the cure of severe talipes varus.

OPERATIONS ON BONES.

Osteotomy.

In sixteen cases of genu valgum, double osteotomy after McEwen's method was performed with satisfactory results. In five other cases the operation was performed on one femur only. In one of these cases the tibia also was curved and was divided. Slight suppuration occurred in one case. Division of the femur after Ogston's method was twice performed for the cure of genu valgum, and in one of these cases the tibia also was divided.

Osteotomy was performed three times for the cure of genu varum. In one case the right femur was divided after McEwen's method; in one, the femur of the right side, and the tibia and fibula on the left; in one the tibia and fibula alone.

In five cases the tibia was divided in order to remedy rachitic curvatures. In two other cases one tibia alone was divided, and in two more a wedge-shaped portion of bone was removed. In one case the operation was followed by suppuration. In the case of a badly united fracture of the femur with shortening, the bone was chiselled through, and the limb restored almost completely to its normal length. In the case of a badly united Pott's fracture, with much deformity and loss of use in the limb, osteotomy of the tibia and fibula, followed by removal of the astragalus, resulted in much improvement, the patient being able to walk for several miles without pain. In one case of anchylosis of the hip in a bad position, the neck of the femur was divided with benefit. In a case of bad talipes varus, the tarsal arch was divided transversely, no bone being removed.

Trephining.

In three cases the mastoid bone was trephined for necrosis. Two of the patients made a good recovery, but one, who was admitted in a pyæmic condi-

tion, and with plugging of the lateral sinus, was not relieved by the operation, and died.

Trephining was once done for epilepsy following a head injury. The patient made a good recovery. (*See* Appendix to Table I.) In one case the humerus, and in one the tibia, was trephined on account of chronic periostitis and thickening.

In three cases of badly united fractures, the bones were broken again; in one case the femur, and in two the radius and ulna were thus refractured.

AMPUTATIONS FOR INJURY.

Primary.

Arm.—Three cases of amputation in the middle third all recovered. The operations were performed respectively for compound comminuted fracture of the humerus, radius, and ulna, for extensive laceration of all the soft parts in the arm and forearm, and for compound dislocation of the elbow, with fracture of the articular bone.

In one case of amputation at the upper third of the arm, death ensued on the 7th day from erysipelas with pneumonia.

Forearm.—In one case for lacerated wound with good result.

Part of Hand.—For contused wound with good result.

Digits.—In eleven cases with good result.

Leg.—In one case of compound fracture of the tibia and fibula extending into the ankle joint, amputation was performed in the middle third.

In another case, amputation in the upper third for compound fracture resulted in death from asthenia and bronchitis on the 37th day. The patient was a feeble man of 64 years.

Thigh—Lower Third.—For compound fracture of tibia and fibula with good result.

In the *Middle Third*, for compound fracture of the femur. The patient's limb had been crushed by a girder, from which he had not been extricated for nearly an hour. He had lost much blood, and died in a few hours from shock. In another case of a child, aged 6, whose femur had been fractured into the knee joint by a tram-car. The child died in a few hours with symptoms of injury to the abdominal viscera, but no post-mortem examination was permitted.

Secondary.

Forearm.—In three cases. For suppuration in wrist joint, with ulceration into radial artery: for compound dislocation of the wrist, and for a lacerated wound of the hand, followed by necrosis of the carpal and metacarpal bones. All the patients made a good recovery.

Leg—Upper Third.—For tetanus, following a lacerated wound of the leg. The patient died.

Amputation was performed in the middle third in two cases. In one, 5 weeks after a compound fracture of the tibia into the ankle joint, with extensive suppuration and delirium tremens. Erysipelas followed the operation, and the patient died. The other patient, who had suffered from a compound fracture of the tibia and fibula, made a good recovery.

Thigh—Lower Third.—In two cases for compound fractures of the tibia and fibula. In one, for suppurative arthritis, following a lacerated wound, opening the knee joint. In one, 30 hours after the accident, for compound comminuted fracture of the femur and tibia. The other femur was also fractured, but the patient made a good recovery, as did also the three others previously mentioned. Amputation was performed, with good result, in one case, in the middle third, for suppurative arthritis of the knee joint, following a wound.

AMPUTATIONS FOR DISEASE.

Ankle Joint.—In seven cases by Syme's method. In four by Roux's. All the operations but two were performed for disease of the ankle joint or of the tarsus. In one case amputation was done for epithelioma of the foot, and in one for acute periostitis of the os calcis, followed by necrosis.

Arm.—In the lower third for extensive syphilitic ulceration and scarring.

Chopart's.—In one case for severe talipes equino-cavus.

Forearm.—In two cases for disease of the wrist joint.

Hip.—In one case, by Furneaux Jordan's method, for advanced hip disease. The patient, a lad aged 19, died of shock shortly after operation.

Knee Joint.—In one case for old excision, followed by deformity and uselessness of the limb.

Leg—Lower Third.—In four cases. Once for chronic ulcer of the leg, and once for gangrene of the foot in an old man of 68, who had very rigid vessels and diabetes. Both these patients made good recoveries, and in the latter case the sugar in the urine disappeared after a time.

In one other case of diabetes, with moist gangrene of the foot, amputation of the leg was performed. The operation did not arrest the gangrene, and the patient died. In the fourth case, for which the leg was amputated, the patient had disease of the ankle and necrosis of the tibia. Pyæmia ensued, and the patient died.

Shoulder.—The only case in which amputation was performed at the shoulder joint was that of a lad aged 19, who was admitted with a large round-celled sarcoma, growing inside the head of the humerus. Secondary hæmorrhage occurred on the 7th day after operation, but was arrested by pressure. It again burst out on the following day, and the subclavian artery was ligatured in the third part of its course. The patient died almost directly afterwards.

Thigh—Lower Third.—In nine cases for disease of the knee joint, all the patients recovered. In one case for necrosis of the tibia and disease of the ankle joint; in one for infantile paralysis, with ulceration of the leg; in two for acute periostitis of the femur, with suppuration in the knee joint and pyæmia; and in one for embolic gangrene of the leg. All the patients but the last recovered. The patient who died was a feeble old woman of 57, with advanced heart disease, and gangrene extending to the middle of the leg. The operation was necessitated by the extremely foul state of the gangrenous limb, and by the fact that the patient seemed to suffer from absorption of septic matter. A post-mortem examination showed that the popliteal artery was plugged by an embolus.

Thigh—Middle Third.—In four cases, with one death. The latter case was one of embolic gangrene, with heart disease, almost precisely similar to that last described. The patient was a man aged 55. No post-mortem examination was allowed. In two of the three other cases necrosis of the femur was the cause of amputation, and in the remaining case acute periostitis of the lower end of the femur, with necrosis.

Thigh—Upper Third.—In one case, with good result, for central necrosis of the femur and suppuration in the knee joint.

Penis.—In six cases for epithelioma.

Breast.—In nineteen cases for carcinoma, with one death. The patient who died was a woman, aged 52. Fourteen days after operation she developed erysipelas. This was complicated by bronchitis and a dilated heart, and she died 5 weeks after amputation. In three cases for proliferous cystic disease, and in one for multiple cysts. The breast was removed with the axillary glands in nineteen cases for carcinoma, with one death. This resulted from erysipelas in a woman, aged 61, 3 weeks after operation. In one case the breast with the axillary glands was removed for sarcoma, with a satisfactory result.

REMOVAL OF TUMOURS.

A dermoid cyst, containing sebaceous matter, was removed from the floor of the mouth in the middle line in a girl aged 5. In four cases scirrhous nodules were removed from the breast without amputation of the latter. In ten cases recurrent scirrhous growths were removed from the breast and the axilla.

In a case of sarcoma in the axilla, the growth was found to have invaded the axillary artery and vein, and to have extended up to the subclavian vessels. The operation was attended by severe hæmorrhage, and though this was arrested at the time, secondary hæmorrhage ensued 6 days later, and the patient died. A post-mortem examination showed that the vessels were in great part destroyed by the growth, which had apparently originated in the axillary glands.

In the case of sarcoma of the superior maxilla, the patient was attacked with pneumonia apparently of a septic nature a few days after removal of the growth. He died, but a post-mortem examination was not permitted.

OPERATIONS ON THE TONGUE.

Of five cases in which the whole tongue was removed, in three cases the ecraseur was used, and in two cases scissors. In one of the former and in one of the latter the cheek was also split. In one case enlarged glands were removed at the time of the operation.

In five cases in which the lateral half of the tongue was removed the ecraseur was employed. In one case the cheek was split, and in one some enlarged glands were removed.

The anterior half of the tongue was once removed by the ecraseur and twice by scissors. In one of the latter cases glands were removed. All the above operations were performed for epithelioma.

In one case a papillomatous growth, which after removal was found to be epitheliomatous, was locally removed. In one case a syphilitic ulcer, which resisted treatment, was excised.

In three cases of epithelioma of the floor of the mouth, the disease was freely removed, together with portions of the lower jawbone, in two instances. In one case a recurrent epithelioma was removed from the tongue, and in one case of advanced epithelioma the gustatory nerve was divided. All the patients who were subjected to operations on the tongue recovered.

OPERATIONS ON NERVES.

Secondary Suture.

The operation of secondary suture was performed three times on the median nerve at intervals of 15 days, 3 weeks, and 9 months after the injury, and on the ulnar nerve after an interval of 3 weeks, 5 months, and 2 years. In all cases but one (that of the median, in which 3 weeks had elapsed) the operation resulted in some improvement; but none of the patients had the nervous functions completely restored when discharged.

In one case the musculo-spinal nerve was explored on account of paralysis following a blow on the arm. The nerve appeared to be in a healthy state, and after galvanism for some weeks the paralysis entirely passed away.

OPERATIONS ON NOSE.

Rhinoplastic Operations.

In one case for destruction of the nose by syphilis, and in one for deformity from injury. In each case the appearance of the patient was much improved.

OPERATIONS ON VASCULAR SYSTEM.

Ligature of Arteries in Continuity.

The superficial femoral was ligatured in one case for popliteal aneurysm, two ligatures of kangaroo tendon being applied and the vessel divided between. In one case the common iliac was ligatured for the cure of an aneurysm of the

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leave his bed, and 9 months after operation left the hospital to go into the country. On September 22nd, 1884, he returned, with the tumour still pulsating and increasing. In October it was decided to try the effects of galvano-puncture. On October 2nd, six needles being used, the current was passed for a quarter of an hour. The tumour became smaller and harder, and on the 16th the operation was repeated. This second puncture was followed by slight sloughing at one of the needle holes, and from this place violent hæmorrhage ensued on January 6th. This was treated by plugging, but it again recurred, and the patient died on January 15th. A post-mortem examination revealed a very large sac, almost completely filled with firm clot, the amount of fluid it was capable of containing amounting only to three or four ounces.

LIGATURE OF VARICOSE VEINS.

One patient, a woman aged 29, died of septicæmia after ligature of varicose veins in the thigh and leg. A post-mortem examination showed that the veins at the seat of operation contained disintegrating, semi-purulent clot. The patient was hydrocephalic. A large congenital aperture also existed in the left side of the diaphragm, through which the stomach and spleen, and a great part of the large and small intestines, protruded into the left pleural cavity. The left lung was exceedingly small, and for the most part atalectic.

OPERATIONS ON GENITO-URINARY ORGANS.

Nephrotomy.—In a man, aged 34, for suppurative nephritis, without apparent cause. The kidney was drained, with much benefit to the patient.

In a woman, aged 45, for similar disease, with a similar result.

In a woman, aged 62, for supposed calculus, with much pain. No calculus was found, and the kidney appeared to be quite healthy. The symptoms were relieved by the operation.

In a woman, aged 50, who was found to have an irremovable carcinomatous growth. The patient died of pyæmia.

In a woman, aged 46, for suppurative nephritis. The operation was not of any benefit.

Nephro-Lithotomy.—In a woman, aged 63, a large calculus was successfully removed. The patient died, and a post-mortem examination showed that the kidney from which the stone had been removed was the seat of an epitheliomatous growth.

Nephrectomy.—In a woman, aged 41, for calculus in kidney, with suppuration. The patient made a good recovery.

(For details of both of these cases, *see* the last volume of St. Bartholomew's Hospital Reports).

Electrolysis for Enlarged Prostate.—This was done in one case, a bougie being passed per urethram as far as the enlarged middle lobe. The patient died 4 days after the operation, and a post-mortem examination showed that much sloughing had followed the electrolysis.

Electrolysis for Stricture of the Urethra.—In four cases, with much improvement in micturition.

External Urethrotomy.—This operation was performed ten times. Three patients died—one of septicæmia, one of erysipelas, and one of suppuration in the prostate with cystitis. The two first of these cases were complicated by extensive urinary extravasation. The third was that of an old man of 66, with strictured urethra, enlarged prostate, and advanced disease of the urinary organs.

Lateral Lithotomy.—In four cases, with one death. The patient who died was aged 66. His kidneys were much diseased.

external iliac. A single ligature of kangaroo tendon was used, and the operation was at once followed by cessation of pulsation in the sac. Next day, however, pulsation was as vigorous as before ligature. The wound was reopened, the ligature was found to be quite loose, having apparently become stretched. The artery was exposed a little higher up, and ligatured with silk. The next day the leg and foot were very cold and blue, and though for a time they seemed to improve, moist gangrene ensued, and amputation through the lower third of the thigh was performed on the tenth day. From this second operation the patient did not rally, and died two days later on. A post-mortem examination showed that the common iliac artery was securely tied. Both it and the external iliac were filled with clot. The aneurysmal sac sprang from the upper third of the external iliac. It was filled with clot, and had so compressed the external iliac vein, which was flattened out over it, that thrombosis of the latter had ensued; the clot extended into the common femoral and into the superficial and deep femoral veins.

The superficial femoral artery and vein were ligatured in one case of punctured wound involving both vessels in Hunter's canal. The patient was a medical student, aged 19, who accidentally ran a straight bistoury into the inner side of his thigh. Profuse venous hæmorrhage ensued; pressure was at once applied, and the limb was bandaged and elevated. Next day when the pad of lint over the wound was removed it was noticed that, although there was no bleeding, there was a distinctly pulsating swelling. Further examination discovered a loud humming bruit in the thigh and leg, with venous pulsation. It was decided to treat the case by rest, and pressure, and by careful bandaging of the whole limb. The swelling, however, increased in size, the circulation in the thigh became much impeded, and it was evident that, unless something was done, gangrene would ensue. The thigh was therefore freely opened, and a long slit wound was discovered in the femoral artery, extending into the femoral vein, and allowing of the escape of blood both into the vein and the tissues of the limb. The artery was then tied above and below the wounded spot; but hæmorrhage continuing from the vein, the latter was treated in the same way. The patient made an uninterrupted recovery, and the limb, after a few months, was quite as useful and strong as before the accident.

In a case of recurrent pulsation the popliteal artery was ligatured in two places, and divided between the ligatures. The case of this patient is mentioned in the Appendix to Table I. of the Surgical Reports of last year. All other treatment had failed. After the last operation pulsation ceased, and the patient was able to resume his occupation.

The superficial femoral and brachial vessels were tied in a girl, aged 19, for embolic aneurysms, accompanied by heart disease, double ligatures of cat-gut being used, and the vessels divided between. The aneurysms were situated in the calf and in the bend of the elbow on the right side, and became consolidated after the ligature. A fortnight after the operation the patient became hemiplegic, and then all pulsation suddenly ceased in the right common femoral artery. The right foot became partly gangrenous, and the patient died 7 weeks after admission. A post-mortem examination showed ulcerative endocarditis, embolism of the left middle cerebral and anterior cerebral vessels, recent embolism and ulceration of the right common iliac, aneurysm of the left external iliac, old occlusion of the left common femoral, and plugging, followed by ulceration of the right brachial and posterior tibial arteries.

GALVANO-PUNCTURE FOR SUBCLAVIAN ANEURYSM.

The patient was a man whose previous history has been detailed at page 71 of the Appendix to Table I. of the Surgical Tables for the year 1883. The right arm was originally amputated at the shoulder joint, on October 1st of that year, for the cure of a subclavian aneurysm. The operation was followed by a diminution in the rapidity of the growth, but gradually the aneurysm attained the size of a child's head, and encroached upon the thoracic cavity, absorbing the ribs and causing great pain. For some months the patient was kept under the influence of morphia, and 6 months after the amputation the tumour became more solid, and pain subsided. He was, after a time, able to

leave his bed, and 9 months after operation left the hospital to go into the country. On September 22nd, 1884, he returned, with the tumour still pulsating and increasing. In October it was decided to try the effects of galvano-puncture. On October 2nd, six needles being used, the current was passed for a quarter of an hour. The tumour became smaller and harder, and on the 16th the operation was repeated. This second puncture was followed by slight sloughing at one of the needle holes, and from this place violent hæmorrhage ensued on January 6th. This was treated by plugging, but it again recurred, and the patient died on January 15th. A post-mortem examination revealed a very large sac, almost completely filled with firm clot, the amount of fluid it was capable of containing amounting only to three or four ounces.

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Lateral Lithotomy.—In four cases, with one death. The patient who died was aged 66. His kidneys were much diseased.

Median Lithotomy.—In one case, in which the bladder was found to contain a piece of necrosed bone (apparently a sequestrum from the pubes) surrounded by phosphates.

Puncture of the Bladder.—The two patients who died had malignant tumours of the bladder. Their deaths were independent of the operation.

Removal of Prolapse of the Urethra.—This operation was performed on a female child of 10 years, for prolapse of the mucous membrane.

Median Cystotomy.—In a case of epithelioma of the bladder, to give relief from the pain caused by artheterisation. Death occurred independently of the operation.

RECTAL OPERATIONS.

Excision of the Rectum.

This operation was performed on six occasions, four of the patients being females, two being males. In four cases the disease for which the rectum was excised was adenoid carcinoma, in two spheroidal-celled carcinoma. All the patients made good recoveries.

Ligature of Hæmorrhoids.

One patient died after operation. She was a woman, aged 49, with extensive fatty disease of the heart, and large white kidneys; death was due to cardiac syncope.

Linear Proctotomy.

In four cases for fibrous stricture. In one of these the patient had suffered from a congenitally imperforate anus, which condition had been relieved by operation, the gut remaining narrowed at the seat of the original occlusion.

One of the four patients operated upon died suddenly a fortnight after operation from extensive sloughing with congestion of the lungs. She was in a very feeble state before admission, and no post-mortem examination was allowed.

MISCELLANEOUS OPERATIONS.

Spina Bifida Injected with Iodo-glycerine Solution.

In two cases. In one patient the injection produced no noticeable effects. The other patient, a child of 3 months, died of suppurative spinal meningitis. The spina bifida was situated in the lumbo-sacral region, and was a "meningo-myelocele."

Removal of Vermiform Appendix.

This was the case of a man, aged 50, who was admitted with a fæcal fistula in the groin. Exploration showed this to be in connection with an ulcerated vermiform appendix. The latter was therefore removed.

OPERATIONS ON HERNIÆ.

In ten cases of strangulated inguinal herniæ in males, reduction was effected by taxis, as well as in two cases of femoral herniæ in females. One patient, a woman, aged 39, died before any operation could be performed, a few hours after admission. She had a strangulated femoral hernia.

Herniotomy for Relief of Strangulation.

In twenty-one cases of femoral hernia in which the sac was opened fourteen patients recovered. Two others, in which the sac was not opened, also recovered. With one exception all the patients were females.

Of the seven patients who died. In one the gut had been reduced in a gangrenous state before the woman was admitted; she died in 3 hours. In one the intestine was found to be in a gangrenous state in the sac. It was

opened, but the patient survived only a few hours. One patient died 54 hours after operation in an exhausted state; no post-mortem examination was allowed. One patient died two days after operation from diffuse peritonitis. One patient, aged 70, died 40 hours after operation from exhaustion. There was no peritonitis, but the gut above the seat of constriction was distended.

In one case hæmorrhage occurred after operation from a wound of the branch of communication between the obturator and epigastric arteries. The blood escaped into the abdominal cavity and not externally. The patient, a woman of 60, died the next day.

The only man operated upon for strangulated femoral hernia died in 40 hours. He was 67 years old. The gut had been strangulated for 3 days. A post-mortem examination was not permitted.

Of eleven cases of strangulated inguinal hernia, all the patients were males, and in all the sac was opened. One patient died. He was admitted in a moribund state with gangrene of about 10 inches of gut. He died in 2 hours.

The only case of strangulated umbilical hernia operated upon occurred in a woman of 60. As far as the hernia was concerned she did very well, and the wound healed soundly. Her death occurred a fortnight after operation from general bronchitis.

Radical Cure.

In each case the sac was opened, and after the fundus had been cut away the neck was sewn up. In one patient this operation was followed by continuous vomiting and retching. The vomit was not fæcal, and the patient suffered from no abdominal pain. Death occurred 20 hours after operation, but no post-mortem examination was permitted.

Excision of Sac of Old Femoral Hernia.

In two cases, one a man, the other a woman, on account of hydrocele of the hernial sac.

ABDOMINAL SECTION.

Of seven males operated on two recovered and five died. The two former were aged respectively 59 and 19. The older patient was admitted with great abdominal distension, fæculent vomiting, and great pain of 4 days' duration. The abdomen was opened in the middle line, but no cause of obstruction was discovered. The small intestine was greatly distended and apparently in a state of acute inflammation. A coil of it was opened and stitched to the wound. Fæcal matter escaped in large quantities to the great relief of the symptoms. The patient left the hospital three months later, with the wound healed, and a free natural passage for the intestinal contents. The patient of 19, who recovered, was a medical student, who had suffered from abdominal pains with sickness for 11 days. There was not complete obstruction to the passage of fæces. The left side of the abdomen was more distended than the right; the temperature was high and the pulse quick. An opening was made in the left linea semilunaris, and a pint or two of pus evacuated from the abdominal cavity, in which it had been partially localised by peritoneal adhesions. The patient made an uninterrupted recovery. (See *Transactions of Clinical Society* for 1884-85.)

A lad, aged 17, was admitted with pain and distension of the abdomen, complicated with vomiting. The right side of the abdomen was more distended than the left, and an opening was made at the seat of the greatest swelling, just above the right anterior superior spine of the ilium. A collection of pus, limited by peritoneal adhesions, was evacuated. For 4 weeks the patient did very well; the wound healed, and he was able to leave his bed. Quite suddenly one day he was seized with severe abdominal pain, became quickly collapsed, and died. A post-mortem examination showed that a pin had lodged in the vermiform appendix long antecedent to admission.

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ABDOMINAL SECTION.

Of seven males operated on two recovered and five died. The two former were aged respectively 59 and 19. The older patient was admitted with great abdominal distension, fæculent vomiting, and great pain of 4 days' duration. The abdomen was opened in the middle line, but no cause of obstruction was discovered. The small intestine was greatly distended and apparently in a state of acute inflammation. A coil of it was opened and stitched to the wound. Fæcal matter escaped in large quantities to the great relief of the symptoms. The patient left the hospital three months later, with the wound healed, and a free natural passage for the intestinal contents. The patient of 19, who recovered, was a medical student, who had suffered from abdominal pains with sickness for 11 days. There was not complete obstruction to the passage of fæces. The left side of the abdomen was more distended than the right; the temperature was high and the pulse quick. An opening was made in the left linea semilunaris, and a pint or two of pus evacuated from the abdominal cavity, in which it had been partially localised by peritoneal adhesions. The patient made an uninterrupted recovery. (See *Transactions of Clinical Society* for 1884-85.)

A lad, aged 17, was admitted with pain and distension of the abdomen, complicated with vomiting. The right side of the abdomen was more distended than the left, and an opening was made at the seat of the greatest swelling, just above the right anterior superior spine of the ilium. A collection of pus, limited by peritoneal adhesions, was evacuated. For 4 weeks the patient did very well; the wound healed, and he was able to leave his bed. Quite suddenly one day he was seized with severe abdominal pain, became quickly collapsed, and died. A post-mortem examination showed that a pin had lodged in the vermiform appendix long antecedent to admission.

Its head was crusted with a mass of calcareous deposit the size of a hazel-nut; its point protruded through an ulcerated aperture in the vermiform appendix. A perityphlitic abscess had formed, and had communicated with the abdominal cavity. At first the pus had been localised by adhesions, but the cause of the last fatal attack was rupture of the abscess into the general peritoneal cavity, and diffuse peritonitis.

A man, aged 30, was admitted with persistent vomiting, abdominal pain and distension, and absolute constipation. An old hernial sac in the right inguinal region was opened, but as nothing was discovered in it, the incision was extended into the abdominal cavity. The vermiform appendix was found in a sloughing condition; it contained a small gallstone. The patient, who was in a state of extreme exhaustion, died 36 hours after the operation.

A man, aged 33, was admitted with symptoms of intestinal obstruction of 4 days' standing, which had suddenly commenced while he was lifting a weight. A tense swelling was found in the right inguinal region, and the abdomen was accordingly opened in this situation. A large coil of gangrenous intestine at once came into view, and was found to be closely constricted by bands of adhesion passing from the spermatic cord to the neighbourhood of the internal abdominal ring. It was found necessary to divide the spermatic cord before reduction could be effected. Part of the gangrenous gut was cut away, and an artificial anus established. Four days later the patient died from severe secondary hæmorrhage, the blood escaping into the peritoneal cavity.

A lad, aged 15, was admitted with abdominal distension, vomiting, pain, and collapse. The abdomen was opened in the middle line, and found to be distended with pus. This was evacuated, and the peritoneum washed out. The patient died in a few hours. A post-mortem examination revealed no cause for the suppuration. The case was apparently one of idiopathic purulent peritonitis.

A male child, aged 3½ years, was suddenly seized with vomiting 5 days before admission, having previously been quite well. The vomiting continued until admission, and nothing was passed by the bowels. The abdomen was greatly distended, and the child in an almost moribund state. The abdomen was opened in the middle line, and the first distended piece of intestine that came into view was opened and stitched to the abdominal wall. From this aperture, however, but little fæcal matter escaped, and the child died the following day, the bowels having acted once. Beyond slight peritonitis, nothing abnormal was discovered at the post-mortem examination.

Of the three cases of abdominal section on female patients (exclusive of operations for ovariotomy), one was performed on a woman, aged 24, on account of a tumour of doubtful nature, which proved, on exploration, to be a dermoid cyst of the ovary which had become inflamed. It was drained, and the patient made a good recovery.

A girl, aged 15, was admitted with symptoms of abdominal obstruction, having suffered from sickness and pain for 12 days, with complete constipation for 10 days. The abdomen was much distended, and the vomit was fæculent. Abdominal section was performed, and some purulent matter evacuated from a cavity shut off by adhesions from the general peritoneal cavity. The patient died the same afternoon, and a post-mortem examination showed that there had been old perityphlitic inflammation, with formation of bands of adhesion, which had constricted part of the small intestine. In addition there had been recent acute inflammation with sloughing of the vermiform appendix and peritonitis.

In a girl, aged 9, the abdomen was opened in the middle line for the relief of an intussusception. The gut was in a gangrenous state, and a loop of intestine was accordingly opened. The patient died two days later, and a post-mortem examination showed that both the constricted gut and the sheath were sloughing.

COLOTOMY.

In five cases on men for obstruction, due to cancer of the rectum. Three patients made good recoveries; one died 11 weeks after operation from extension of the disease. The operation afforded him much relief. The third patient died 3 weeks after operation from the same cause.

In five cases on females. Three for cancer, with obstruction; two for fibrous stricture, with ulceration. The two latter died—one, 5 days after operation, with advanced renal disease and sickness; the other, a month after operation, with extensive syphilitic disease of various parts of the body.

TRACHEOTOMY.

In one case of cancer of the œsophagus, opening into the trachea high up. In one, of lympho-sarcoma of the neck, causing dyspnœa from pressure. In one, of epithelioma of the larynx, with dyspnœa. These three patients died. In one case, for asphyxia during the administration of ether to a drunken man, with a compound fracture of the leg. He recovered without complications.

In twenty-four cases for croup or diphtheria, with six recoveries.

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SUB-TABLE, SHOWING THE NUMBER OF CASES OF ERYSIPELAS, PYÆMIA, &c.

DISEASES.	Under 5.		5—10.		10—20.		20—30.		30—40.		40—50.		50—60.		60—70.		70—80.		Total.		Deaths.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Cutaneous Erysipelas—																						
Admissions	2	3	3	3	6	10	14	5	13	7	13	9	8	3	...	...	1	...	60	40	**3**	**1**
Occurring in Hospital	...	1	1	1	3	2	1	3	1	...	1	1	1	...	1	...	...	1	9	9	...	...
Occurring after operation	...	...	...	1	1	...	...	1	2	...	...	2	3	2	...	1	...	...	6	7	**2**	**2**
Phlegmonous Erysipelas — Cellulitis—																						
Admissions	2	...	...	1	2	1	10	2	9	5	9	1	9	1	4	2	1	...	46	13	**3**	**3**
Occurring in Hospital	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	2	...	**2**	...
Occurring after operation	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	2	...	**1**	...
Pyæmia and Septicæmia—																						
Admissions	...	...	2	...	4	1	...	1	...	...	...	...	...	...	...	...	...	...	6	2	**4**	**2**
Occurring in Hospital	...	...	...	...	2	1	1	...	...	...	1	...	...	...	...	...	...	...	4	1	**1**	...
After operation	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	...	...	...	2	3	**1**	**3**
Delirium Tremens—																						
Admissions	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Occurring in Hospital	...	...	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	2	1	...	...
Tetanus—																						
Admissions	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	**1**	...
Occurring in Hospital	1	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	3	1	**3**	...

APPENDIX TO SUB-TABLE OF CASES OF ERYSIPELAS, &c.

ERYSIPELAS.

ALL CASES, BOTH MEDICAL AND SURGICAL, ARE INCLUDED IN THE TABLE.

Admissions.

The apparent discrepancy between the number of cases in this and in the first Table is due to the fact that some cases were admitted with erysipelas complicating some other disease or some injury, and that such cases have been entered in the first Table under the heading of the primary disorder.

Occurring in Hospital.

Male.—In one case of abscess of the neck. In one of rodent ulcer. One of simple fracture of tibia (*see* Appendix to Table I.). One of compound fracture of the tibia and fibula. In two cases complicating lacerated wounds—one of the thigh, the other of the scalp. In two cases of lymphangitis of the leg. In one case of psoas abscess complicating hip disease. In one of abscess in connection with caries of the tibia.

Female.—In one case of burns of the arms and face. In one of necrosis of the femur, one of caries of the tarsus, and one of subacute periostitis of the tibia. The other cases were, respectively, an inflamed breast, a chronic ulcer of the leg, a suppurating patellar bursa, a strumous knee joint, and an extroverted bladder.

After Operations.

Male.—In one case of primary amputation of the arm; in another of primary amputation of the thigh; in one case of secondary amputation of the leg for compound fracture; also after castration, gouging of carious bone, removal of epithelioma of lip, removal of suppurating lymphatic gland, and external urethrotomy for stricture with urinary extravasation.

Female.—In two cases after sequestrotomy. In one after trephining the tibia. In two cases after amputation of the breast and removal of the axillary lymphatic glands, and in one after amputation of the breast alone. In one case after nephrectomy.

PYÆMIA AND SEPTICÆMIA.

Admissions.

Male.—Three times complicating acute periostitis. Twice complicating necrosis of the mastoid bone and suppuration in the middle ear. Once following a lacerated wound of the hand with gangrene.

Female.—In one case of necrosis of the mastoid bone, and one of necrosis of the coccyx.

Occurring in Hospital.

Male.—In one case of acute periostitis, in one of hip disease, and in one of stricture of the urethra with suppurative nephritis.

Female.—In one case of acute periostitis.

Occurring after Operations.

Female.—In one case of amputation of the leg for disease of ankle joint. In one of ligature of varicose saphena vein. In one of nephrotomy for carcinoma of the kidney.

TETANUS.

Admissions.

In one case of lacerated wound of the finger.

Occurring in Hospital.

In one case of lacerated wound of the scalp. In one of lacerated wound of the leg. In one of lacerated wound of the foot.

TABLE OF AMPUTATIONS WITH THE PERCENTAGE OF DEATHS DURING THE TEN YEARS

from 1876 *to* 1885 *inclusive.*

OPERATIONS.	CASES UNDER TREATMENT.										PERCENTAGE OF DEATHS.										Total Number of		Average Percentage of Deaths.
	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	Cases.	Deaths	
PRIMARY—																							
Thigh	1	2	4	1	3	1	3	1	2	2	...	...	50·	100·	66·66	100·	100·	100·	50·	100·	20	**13**	65·
Knee Joint	...	1	...	2	...	1	...	...	...	..	...	...	...	50·	...	100·	...	50·	...	...	4	**2**	50·
Leg	3	2	2	1	...	3	4	4	2	3	66·66	100·	50·	...	...	33·33	50·	50·	...	33·33	24	**11**	45·84
Ankle Joint	...	...	...	...	...	2	2	...	3	...	...	...	...	...	...	...	...	...	...	...	7	...	...
Shoulder Joint ...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	100·	...	...	3	**1**	50·
Arm	2	2	3	3	3	...	1	2	...	4	...	...	...	33·33	...	...	...	...	...	25·	20	**2**	10·
Forearm	2	2	1	5	3	...	3	3	4	2	50·	...	...	...	...	...	...	...	...	...	25	**1**	4·
SECONDARY—																							
Thigh	2	...	1	1	...	1	3	1	1	5	50·	...	100·	100·	...	...	66·66	100·	...	...	15	**6**	40·
Leg	...	1	2	...	3	2	1	3	1	3	...	100·	...	...	...	50·	100·	...	...	66·66	16	**5**	31·25
Arm	...	...	...	1	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	5	**1**	20··
Forearm	...	1	1	...	1	1	...	2	...	3	...	...	...	...	...	...	...	...	...	...	9	...	...
Shoulder Joint ...	...	...	...	...	1	...	...	...	...	...	...	..	...	...	100·	...	...	...	...	...	1	**1**	100·

TABLE OF AMPUTATIONS, &c. (*continued*).

OPERATIONS.	CASES UNDER TREATMENT.										PERCENTAGE OF DEATHS.										Total Number of		Average Per Cent. of Deaths.
	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	Cases.	Deaths.	
FOR DISEASE—																							
Hip Joint	1	2	...	3	...	3	2	2	3	1	100·	100·	...	66·66	...	33·33	50·	...	33·33	100·	17	**9**	52·94
Thigh	9	14	19	27	23	25	15	23	27	20	11·11	7·14	10·52	14·81	17·39	24·	13·33	8·69	18·	10·	202	**32**	15·84
Knee Joint	...	...	...	...	...	2	1	1	1	1	...	...	...	...	...	...	...	...	100·	...	6	**1**	16·66
Leg	2	7	9	9	8	10	5	7	3	4	50·	28·57	...	...	...	10·	...	28·57	33·33	50·	64	**9**	14·06
Ankle Joint	6	5	15	14	9	14	8	8	7	11	16·66	...	20·	7·14	...	7·14	12·5	...	...	...	97	**7**	7·21
Shoulder Joint ...	1	...	...	...	2	2	...	1	2	1	100·	...	...	...	50·	50·	...	...	...	100·	9	**4**	44·44
Arm	4	4	3	2	4	3	1	2	...	1	25·	...	33·33	...	25·	...	...	...	...	...	24	**3**	12·5
Forearm	2	4	2	4	4	2	2	3	4	2	...	...	...	...	...	...	...	...	...	100·	29	**2**	6·89

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